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Fabricates Electrically Welded Steel Tubing in New Plant

Modern Production Unit Established in Detroit District with Estimated Monthly Capacity of 3,000,000 Feet

By A. H. Allen

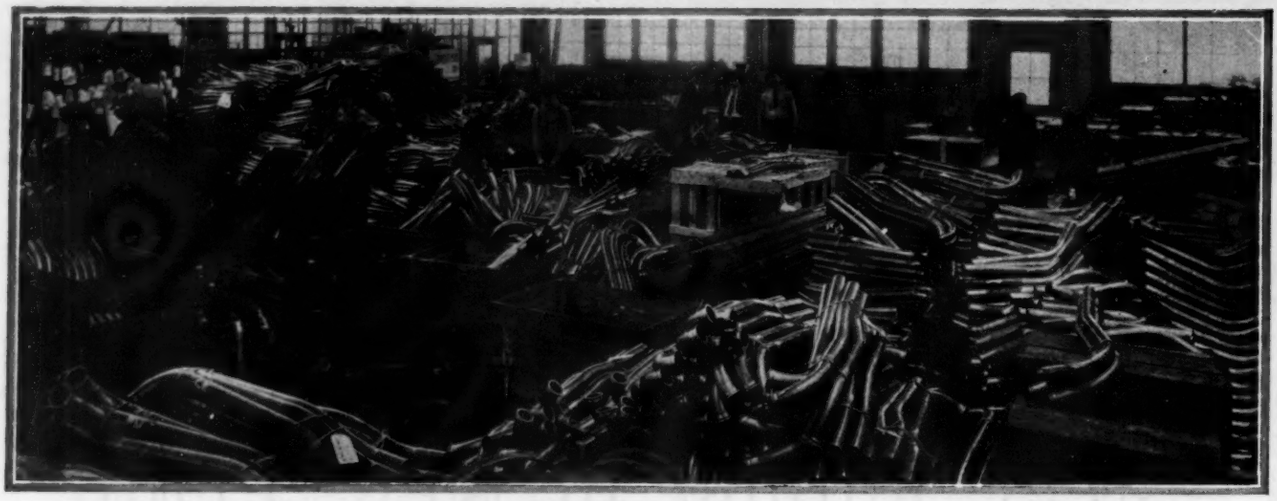
Editorial Representative, Iron Trade Review

TO MEET an increasing demand for electrically welded steel tubing, especially from the automotive industry, Steel & Tubes Inc., Cleveland, recently put in operation a new welded steel tubing plant at Ferndale, Mich., a suburb of Detroit. The new plant, with about 60 per cent of the capacity of the company's plant in Cleveland, was designed to replace a former unit at Toledo, O., in addition to enlarging total capacity.

In general, the unit is a replica of the Cleveland plant. Cold-rolled strip, varying in thickness from 0.016 to 0.140 inch or from 28 to 9 gage is received in coils from the company's mills at Elyria, O., or, in case of a special order, from the Warren, O., mills of the parent company, Republic Iron & Steel Co. This strip is received in coils ranging in length from 150 to 400 feet. It is a mild low-carbon steel, varying in carbon content from 0.08 to 0.12 per cent. These coils are fed to a special reeling machine and are rewound into coils of 3000 to 3500-foot lengths. The reeler is a machine developed by engineers of Steel & Tubes Inc. especially for this process. Ends of the small coils are welded by hand as they are wound into the larger reels.

From the reelers the strip is transported by crane into the electric welding room and into the electric welding machines which, of course,

Several automatic cutoff lathes are operated as shown to cut the finished tubing into desired lengths



A general view of the shipping department illustrating various shapes into which the tubing is formed

are the main units in the manufacture of this tubing. These machines, of which there are six, receive the strip, form it to size, electrically butt weld the seam, cut the tubing off in standard mill lengths ranging from 12 feet up, and eject it at the rate of about 60 feet per minute. All this is done automatically on the machines which are driven electrically. The capacity of each of the six units is in the neighborhood of 2000 to 2500 feet per hour. Plant capacity is estimated at 3,000,000 feet of tubing per month comparing with the 5,000,000 feet per month estimated capacity of the Cleveland plant. The welding units are equipped to form and weld tubing ranging in diameter from 3/16-inch to 4 inches.

After the tubing is formed and welded it is put through any required finishing processes such as swaging, bending, annealing, pickling, drawing and the like. For tubing requiring a smooth interior finish, swaging machines are installed to swage the cold tubing over a mandrel; for smaller sizes such as might be used in bicycle frames or adding machine stands, the tubing is swaged but not over a mandrel, annealed, pickled and drawn. Eight swaging machines are located in the plant for these operations. Provisions are being made for the installation of the necessary annealing furnaces and pickling baths for heat treating.

Special Machines Shape Tubing

To perform the necessary bending operations on the tubing, 14 benders and 14 crank presses have been erected as well as four machine straighteners which take any tubing which may have a slight camber to it and whisk it out, straightened, at the rate of 100 feet per minute. Many orders for tubing specify short lengths; such lengths are cut up on six Bardon & Oliver-type automatic cutoff lathes which have been installed for this purpose.

No further treatment is given to any of the tubing; it is ready for shipment after the finishing operations. Storage facilities are at a minimum, it being the plan to fabricate the tubing only on order. Storage is provided, however, for 2000 tons of cold-rolled strip stock to be kept on hand at all times to insure good delivery on the finished tubing.

An exceedingly important factor in this special process for fabricating tubing is a proper check on the temper of the stock. To insure this correct temper a physical testing laboratory is operated in conjunction with the plant. An Olsen-type ductility testing machine and a Rockwell-type hardness tester are employed, con-

Storage space is provided for 2000 tons of stock which is received in the form of coiled strip

stantly checking the stock as it passes on into the mill.

The plant building itself is 537 feet in length and 211 feet in width, covering an area of 113,000 square feet or approximately 2½ acres of manufacturing floor space. At present the plant is served by one 70-foot span, 5-ton, overhead electric crane for handling stock and finished tubing. A-frames at 40-foot intervals provide adequate daylight facilities. When in complete operation this particular unit will employ 300 men. Cost of erection including equipment is said to have been over $1,000,000.

Electric current for operating the welding machines and other equipment is purchased from local power companies. Generators and other incidental electrical equipment are installed to provide the proper alternating current for the welding units. The entire plant is rate at approximately 300 kilowatts.

The location at Woodward avenue and Nine-Mile road, on the Grand Trunk railroad is thought to be particularly advantageous in serving the large automotive and specialty manufacturers situated in the greater Detroit district.

Steel and Tubes, Inc., also operates plants at Elyria, O., Guelph, Ont., and Brooklyn, N. Y., with main plant and offices at Cleveland.

In addition to hundreds of sizes of commercial-type steel tubing ranging from 3/16-inch to 4-inch O. D. the company also manufactures and sells strip steel, oval, square, rectangular and ornamental tubing in special bends, sizes, and thicknesses, and recently has placed on the markct a new, thin wall electrical conduit.

Muskegon Motor Specialties Co., Muskegon, Mich., announces earnings for nine months of 1929 as $460,000, against $397,810 in all 1928.

PART of the fabricating department with some of the forming and swaging machines in the background

Group Studies Quality in Wrought Iron

Quality and its constituents in wrought iron are being studied by committee A-2 of the American Society for Testing Materials. Information gathered on this subject should be of importance to the entire wrought iron industry. The committee also has completed physical and chemical tests to determine the effect of phosphorus on the physical properties of staybolt iron. Results of these tests will appear in the annual report of the committee for 1930.

A definition for wrought iron is also being prepared by the committee. With the adoption of this definition it is expected that the process clauses of the various American Society for Testing Materials specifications covering wrought iron products will be revised to include wrought iron made by any process so long as the other requirements of the specifications are complied with.

A revision is under consideration of the specifications for staybolt, enginebolt, and extra-refined wrought iron bars, and of the specifications for hollow rolled staybolt iron to consist of a change of the definition of "boxpile," and an increase in the requirements for reduction in area in the latter specifications from 42 to 48 per cent.

Bridge Designs Printed

An attractive booklet containing a selection of bridge designs from the 1928 architectural student competition is being distributed by the American Institute of Steel Construction Inc. Three cash prizes were awarded by the institute for the solution of a theoretical architectural bridge design as a means of encouraging constructive thought towards the betterment of bridge architecture. Ten sepia illustrations of bridges lend an artistic touch to the booklet.

Iron and Steel Accident Rates Decline

In the iron and steel industry as a whole the accident frequency rate declined from 24.5 for the three-year period 1925-1927 to 19.7 in 1928, according to the bureau of labor statistics. The severity rate declined from 2.5 to 2.2. In compiling statistics the bureau has separated ino a group those plants which were among the first to give serious attention to accident prevention. This group includes plants manufacturing fabricated products, sheets, wire and its products, tubes and two other classes manufacturing miscellaneous steel products. From 1913 to 1927 the accident rates of the selected group showed a steady and considerable change for the better, but in 1928 slight increases were registered for all but two of the six units forming the group. The two are those manufacturing tubes and the second classification of those manufacturing miscellaneous steel products.

Structural steel not only continued to have the highest rates of all departments in the industry, but showed an increase in severity rates in 1928.

In the period 1925-1927 foundries had a frequency rate of 60.1 and a severity rate of 3.2. The 1928 figures are 45.9 and 1.8, respectively.

"There is a general impression that the safeguarding of machinery has reached such development that it has become of secondary importance," the bureau comments in its report. "The rates for machinery have declined notably but not much more rapidly than those for other causes. A reasonable amount of attention to machine hazards is still necessary.

How Application of Steel Assists Engineering Advancement

New Properties of Steel Depend on Chemical and Metallurgical Inquiry Into Manufacturing and Fabricating Problems

By E. F. Kenney

Metallurgical Engineer, Bethlehem Steel Co.

MODERN steel production had its beginning about the period of the Civil war and since that time the United States has seen enormous increases in the consumption of steel. The amount consumed per capita in this country increased more than 3000 per cent between 1860 and 1900. The first quarter of the present century saw a further increase of 300 per cent. Today it is estimated that the nation will consume more that half a ton of steel this year for every inhabitant.

It is not an accident that this astonishing growth in the use of steel is concurrent with an era of progress that is the greatest in human achievement. This advancement depends upon steel. Without steel there would be practically no transportation by land, water or air. The generation of power, as we know it, or the application of power to perform useful work, would be impossible.

Output Is Large

Contrast the consumption of steel and of the most important nonferrous metals which have played a part in the development of civilization. Government statistics show that more than twenty-one times as much steel is produced in the United States as the total consumption of lead, copper, zinc, aluminum and tin combined.

The uses of steel in modern life range from the spectacular to the commonplace. There is hardly a moment of our existence when we are not in contact with some employment of the metal or dependent upon it, directly or indirectly, in some important way. From a magnificent engineering achievement, such as the Hudson river bridge now under construction, with its four steel cables that have the strength to support 400,000 tons—from that down to the steel wool that the housewife uses in her kitchen to clean the pots and pans, steel contributes in a myriad of ways to the safety, the comfort and the convenience of the world.

Railroads are pressing for stronger and safer rails and wheels to carry the heavier loads. For a number of years they have tried to meet the issue by increasing the weight of the rail and the carbon content. Today it is realized that the limit has been reached in carbon content, and that unless the physical properties of steel are increased, the heavier and more massive rails will be no more resistant to wear than the lighter ones. Alloys have been tried without much success. Heat treatment has been resorted to, and appears to be more promising than any other remedy so far tried, but the future development of heat treatment depends on the economic necessity of greater wheel pressures and speeds.

Railroads and steel will always go hand in hand. Their advancement is interdependent in the progress of rail transportation.

The extension of highways and railways over rivers, hills and valleys to meet the increasing demands of our civilization necessitates bridging on a large scale. Long span bridges have largely eliminated wood and stone. While concrete reinforced with steel bars is used for piers and very short spans of moderate height, it is out of the question for the larger structures. Economical considerations have demanded higher strength in the structural work of the wide span truss bridges. The great increase in dead load of these large bridges has put a premium on greater unit stresses and these can be used only if the strength of the steel is increased. In meeting these conditions, steels containing percentages of nickel, silicon and manganese have been used to a considerable extent, and other alloy steels have been seriously considered.

Spans of structural steel up to 500 feet, capable of carrying the heaviest loads, are not unusual, but the spanning of clear openings of extreme width has not been common in the past, and the recent performances are so striking as to be worthy of considerable notice.

Trim Stock Increases

The larger buildings show an increasing use of ornamental steel inside moldings, door and window frames, etc., and steel furniture is quite common. In domestic buildings, however, particularly the smaller homes, steel is not used to the same degree as in larger structures, but with the advent of electric welding and processes of expanding steel sections, small structures too will grad-

Is Benefit to Mankind

IN THE social, economic and political life of man, steel has made contributions without which the inhabited globe would be another and far more primitive place to live than it is today. The service that steel has rendered to civilization is outlined in the accompanying article which is part of a paper presented at the fall meeting of the American Iron and Steel institute, New York, Oct. 25. The author, E. F. Kenney, is metallurgical engineer, Bethlehem Steel Co., Bethlehem, Pa.

ually become more dependent on the use of steel.

While we have provided elevated and subway railways to carry the increased number of persons using the districts where large buildings are rising, little has been done to increase the facilities for pedestrians or automobiles. The streets, on the whole, have the same capacity as 50 years ago when two to four-story buildings were the vogue. To provide comfortably for pedestrians today, all of the width of some of the central streets is needed, but this would leave no space for automobiles. The effort to crowd both into the narrow streets involves a hazard of human life which will not long be tolerated. It is almost certain that before long the double-decking of city highways will be imperative. Constructions of this kind already in use indicate the practicability of similar treatment of central city streets on a substantial scale. It is only a question of time when the street congestion will force the construction of additional facilities.

Stresses Require Steel

While the recently completed Holland vehicular tunnel under the Hudson river is composed in part of cast iron segments, the portions which involved the greatest stresses were required to be of steel. The whole tunnel, cast iron and steel alike, is held together by heat-treated steel bolts.

All through the country a wholesale reconstruction of highways has been undertaken to provide proper facilities for automobile traffic. Hundreds of millions of dollars are expended annually in providing the greatest system of permanent roadways in the world. The best and most permanent of these are of concrete, heavily reinforced with steel. Long experience has proven that the best of concrete paving will crack unless bound together with steel bars and rods. The steel used for this purpose amounts to a heavy tonnage, and the equanimity with which the automobile user cheerfully pays a 20 or 25 per cent gasoline tax, when assured it will be used for road construction, promises a growing use of steel for this service.

Oil and gas have long been transported in steel pipe lines. Some of these are of large diameter, made from flat rolled plates or sheets, bent to cylindrical shape and longitudinally welded. There is now under construction a 20-inch diameter welded steel pipe line, 950 miles long, extending from the Texas oil fields to Chicago. This one line requires the use of 191,000 tons of steel and still larger lines are contemplated.

A growing demand for larger tubes of steel for various purposes has stimulated the study of methods for making seamless tubes of large diameters. Much work has been done, and it is likely that, before long, seamless tubes up to 32 inches in diameter and 50 to 75 feet long will be available. The development of these super systems to supply the basic needs of our higher standards of life has only begun to offer a market for steel which in the future will undoubtedly rank with the railroads and the automobile as principal outlets for steel production.

The hull, superstructure, decks, power plants, and propelling shafts of modern ships are all of this metal, steel. During the war when shipping was being so rapidly destroyed that fears were expressed as to the possibility of replacing it quickly, wooden and even concrete ships were built. The promptness with which these were discarded and steel ships built to replace them shows very dearly the position of steel in the shipping industry.

About 30 years ago the development of the internal combustion engine gave an impetus to the automobile industry which has resulted in unparalleled growth. The influence of the automobile was soon felt in the demand for higher qualities in bars, sheets, and forgings than the steel industry had previously been called upon to produce. The challenge was accepted; higher quality steel was produced. Greater strength and endurance of the metal encouraged the automobile builder to more ambitious design, carrying the steel requirements a step further. The result of this seesawing of greater demand and greater performance has brought about greater strides in the production of high quality steels in tonnage quantities than was ever known before.

Auto Greatest Steel User

Sometimes the demands for perfection in these automobile steels seemed unreasonable. Trying to meet them was very hard; it was often discouraging, but it had its reward. Today the automobile is the greatest of all users of steel. In five years its requirements of steel have increased from 3,500,000 tons to 6,700,000 tons per annum. Today there are more than 24,000,000 automobiles in general service; this year more than 5,000,000 will be built.

Because of the use of lighter materials in the construction of airplanes and airships, one does not immediately think of steel as a great necessity in their development. Yet the steel cylinders and other engine parts require the greatest perfection in the steelmaker's art and without them the conquest of the air could never have been attained.

Incidental to aircraft are steel hangars and steel beacon supports. The necessity of landing fields in cities has suggested the construction of steel supported landing platforms over piers and similar structures of large area where unimpeded landings could be made near the heart of cities. For transoceanic travel it is proposed to construct huge floating caissons of steel which, anchored at convenient points at sea, will serve as landing, supply and shelter islands. These caissons, extending below the depth of wave movement and with decks above the reach of the waves, are expected to make the crossing of the ocean certain and safe.

Share Steel Consumption

The huge dirigibles, which rely on their buoyancy to keep them in the air, and for this reason are even more restricted to light materials than the airplanes, have their part in the use of steel. The high duty parts of the engine must be of steel; the mooring masts and the huge hangars must also be of steel. The hangar, being built at Akron, O., to shelter during erection two Zeppelin-type craft for the navy department, will cover 8½ acres of floor space. It will have a span of 325 feet, length of 1175 feet and height of 211 feet.

Helium is preferable to the hydrogen gas which has commonly been used for the inflation of lighter-than-air craft, because helium is light and non-inflammable. Helium is expensive, however, and the losses which resulted from the use of ordinary gas bottles for shipment made it necessary to seek a better container. Tank cars are now constructed equipped with three steel tanks that take the place of 1200 bottles. With three valves, instead of 1200, the loss of helium is considerably reduced. These tanks are made of nickel steel, of the high-powered ordnance grade.

Of the 20,000,000 telephones in the United States, not one would be available were it not for the magnetic properties of steel. Telegraph installations have the same needs for steel as the telephone.

An interesting example of steel's great strength is the huge flask used for simulating deep-sea conditions in the testing of submarine cables. Whole

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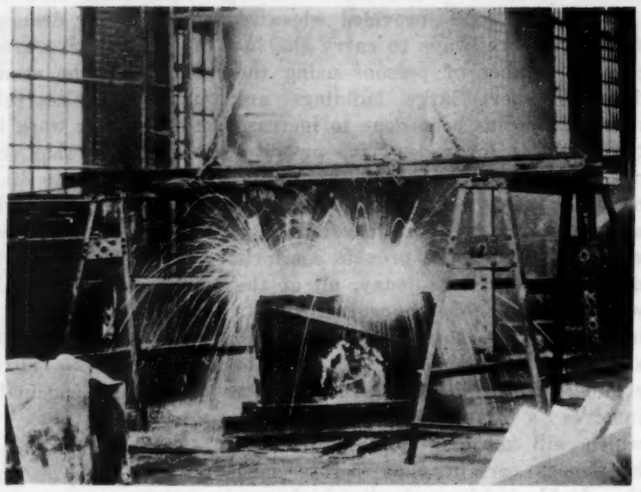
Thermit Welding in Steel Mills

Process Finds Favor in Repairing and Maintaining Plant Equipment

By J. H. Deppeler

Chief Engineer, Metal & Thermit Corp.



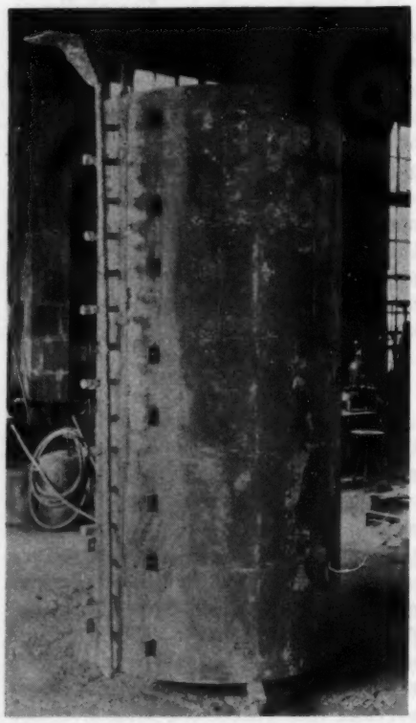
Corner of a steel mill reclamation department showing a thermit reaction in progress

IN GENERAL, the thermit welding process is simple. It requires no manual dexterity on the operator's part and, if instructions are followed, the results are good. The general procedure in the case of the repair of a break is to line up the parts; to cut a parallel-sided gap at the fracture, the width of the gap depending upon the size of the section; surround the break with a refractory mold, which provides an annular space at the fracture; preheat the parts to redness by means of kerosene and air blown into the mold through an opening near the bottom, which preheating simultaneously dries out the mold; and then start the reaction by means of a small amount of ignition powder placed on top of the thermit and tap from the crucible the resulting superheated thermit steel.

It is obvious this thermit steel having 100 per cent superheat and held in place between and around the ends of the pieces to be welded, will give up its superheat to the parts, fuse and solidify with them. If, then, the weld material has good physical properties and is sound and close-grained, and the shrinkage of the weld has been allowed for, the results should be very dependable. Let us, therefore, discuss, first, the physical quality of thermit steel and briefly review the important things in the thermit welding operation upon which so much depends if sound welds are expected, and then proceed to the application of the process in the steel mill.

In considering the physical quality of thermit steel, the first question which naturally comes up is, how can such a cast steel possibly compare in strength with forged steel and will not the strength of the welded part be only that of a similar cast steel part and not that of the original forging? This question is of the utmost importance because, if the thermit weld be considered as having only the strength of cast steel, its application in steel mills would be very limited; but this is not the case. Forgings that have been thermit welded and tested to destruction will just as often fail completely outside of the welded area as they will in the weld or in the metal adjacent to the weld. Let us first theorize as to why this is so and then give various proofs of it. Steel, as cast, differs from forged or worked steel not in its chemical composition but only physically, and this physical difference lies to a great extent in the rendering ineffective of the weakness at the grain boundary. Commercial cast steel on solidifying throws out to the grain boundaries many impurities, and these, forming part of the cementing medium between the grains, are weaker than the grains themselves so that fractures of cast steel are usually intergranular.

FROM a paper presented at the fall meeting of the American Iron and Steel institute. The author, J. H. Deppeler, is chief engineer, Metal & Thermit Corp., New York



Long seam welded in 2-inch boiler plate. This is a new and promising field for the process

It is evident that forging, rolling, or working of these grains distorts them, so that this grain boundary weakness is no longer of any importance and the strength of the piece is then that of the material itself and not of the weaker grain boundary. Now, instead of being a refinement of relatively impure materials thermit steels are the result of the reduction of a very pure iron oxide by an almost perfectly pure aluminum with the result that thermit steels, although cast, invariably fracture through the grains and not, as in the case of most cast steel, along grain boundaries and have, therefore, physically all of the properties of forged steel except its appearance under the microscope. This probably is the explanation; but the fact remains that in every test and by actual service thermit steels compare very favorably

with the physical properties of high grade forgings.

In general, there are three uses for the thermit welding process in the steel mills:

1.—The repair of broken parts, which may be indicated for economical reasons or by the saving in time in getting the mill or machine going.

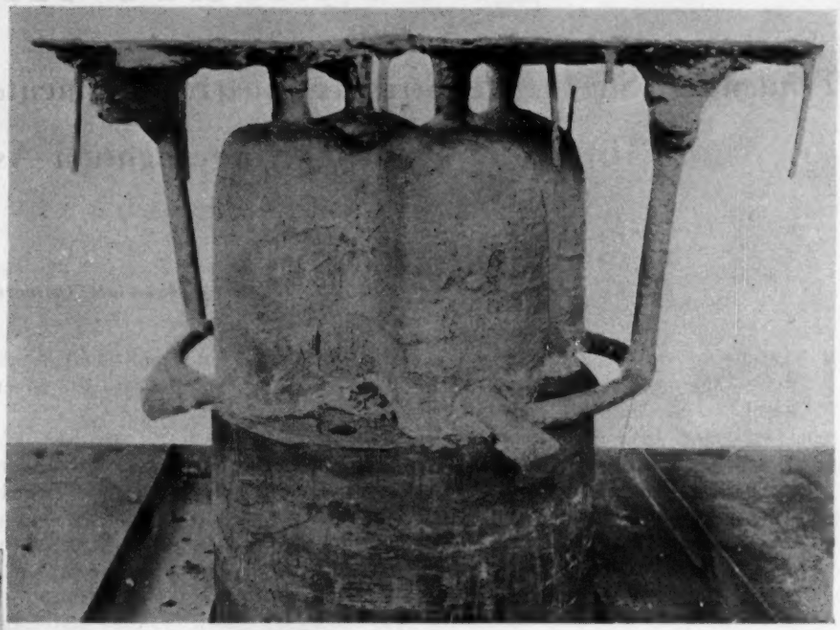
2.—The building up of worn parts, which in many cases replaces the material worn off with one better suited to withstand the service.

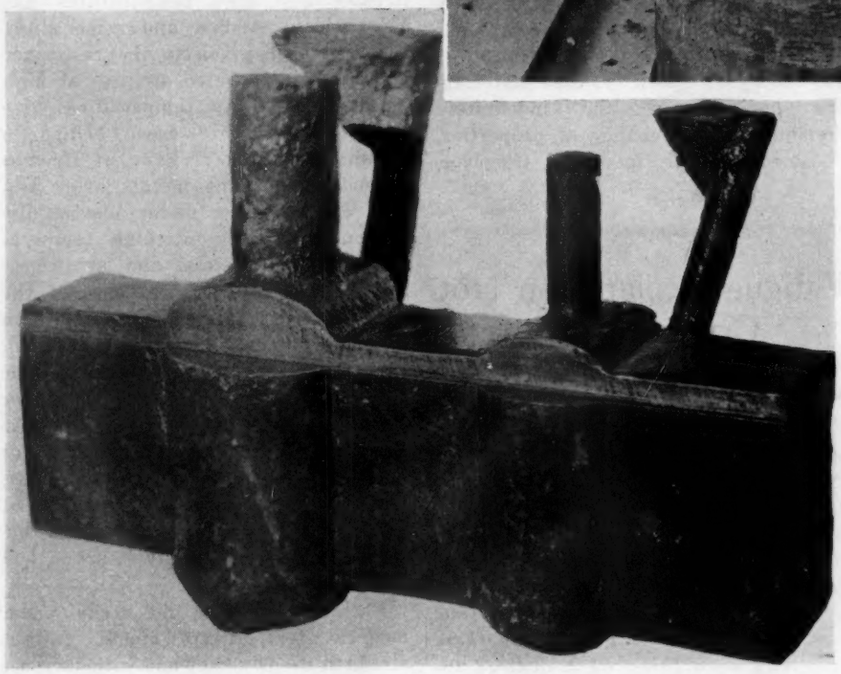
3.—The manufacture of new constructions or the making of old ones in a new way.

As these are all important, we will discuss them separately.

Repairs by Welding

Until recently, this was to the steel man's mind the only use for the thermit welding process. Those mills where break-downs were infrequent would call on outside thermit welders and felt that in their particular case a welding department was not necessary. The emergency value of this





(Above)—Close view of built-up wabbler end with gates and risers still in place. (Left)—Comparisons of amounts of thermit used in the old and new practice. This was made possible as the result of extensive research

form is, of course, admitted and we could recount thousands of cases where mills have resumed operations in only a fraction of the time that it would have taken to replace a part. The photographs reproduced throughout this paper give a fair idea of the possibilities of such emergencies.

As an example, the list below was made from the work done in one mill in a period of a few months. (Each item is mentioned only once although a number of each were welded):

Cast steel tin mill housing.

7½-inch driving axle.

Frame of open-hearth charging machine.

Open-hearth charging peel.

15-inch diameter roll neck.

Replacement of pods twisted off pinion.

Weld through 23½-inch diameter neck of nickel steel pinion.

Side guard post of manipulator rack.

Numerous table rolls.

28-inch diameter single-throw crankshaft for steam engine of automatic reversing blooming mill. And in another mill in about the same period.

132-inch cast steel plate mill housing.

Teeth replaced in numerous 40-inch herringbone pinions.

Cast iron roll of structural mill.

Replacement of entire wabbler end of steel roll.

Replacement of wabbler end of spindle of slab mill.

Repair of broken locomotive frame.

With the introduction of welding departments in the steel mills, the character of the work has broadened and it is no longer restricted to emergency repairs. The replacement of metal worn off is one of the newer applications which has proved to be very profitable. In many such cases, it is very possible that the wearing qualities of the metal added in this manner will be a real improvement over these same qualities in a new piece; for instance, rolls, pinions, spindles, etc., must be designed for a toughness and strength which would preclude the use of steel having the maximum wear resistance, but it is perfectly feasible in the replacement of the worn pods of these parts to use a thermit which will produce a steel of any desired hardness. In practice, steels are selected which are so hard as not to be machinable and the weld can be made so true to size as not to require machining.

Process Opens Wide Field

This welding process opens up a wide field and has greatly changed the methods of manufacture not only of the parts of machines used in the mill but also the products of the mill.

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Crystallization Is Not Cause of Fatigue Failure in Metals

Tendency in Steel Under Stress Is Toward Fragmentation of Crystalline Grains Already in Existence—Investigation Assists Designers

By H. F. Moore

Research Professor of Engineering Materials, University of Illinois

IN studying various types of steels there has been found no steel which is particularly resistant to repeated stress. In a general way the endurance limit of steels under cycles of completely reversed flexure is about 50 per cent of the tensile strength. As the steel grows stronger this percentage diminishes slightly, but there has been found no marked variation of this ratio, called the endurance ratio, for steels of any particular chemical composition.

An outstanding development from the study of fatigue of metals concerns itself with the importance of localized stress. By localized stress is meant a stress which is not computed by the ordinary formulas of mechanics of materials, and which affects only a very small area of metal. Localized stress is found at the roots of screw threads and fillets, at the base of notches, and at holes drilled in a machine member. Under static loading, localized stresses do not affect the strength of ductile metals in any appreciable manner, but under repeated stress they frequently become nuclei for the start of spreading fatigue cracks.

Errors Found in Old Theory

The study of localized stress has led to the rather startling fact that, for such stresses, our old theory of elasticity seems to be seriously in error. Localized stresses affect pure metals, and strong, fine-grained metals much more than they do coarse-grained metals of mixed structure, while according to the theory of elasticity all materials should be affected alike. The fine, heat-treated alloy steels are all sensitive to the effect of localized stress, while a metal like cast iron is practically not affected at all. Cast iron has high localized stresses in it at the edges of its graphite flakes, and additional localized stress adds but little to the effect of its inherent defects.

All metals, however, are less affected by a given localized stress than is indicated for those cases for which we have mathematical formulas for determining the localized stress. It seems that, if we consider an extremely small area, the assumption of the theory of elasticity, that materials are homogeneous and indefinitely divisible without change of properties, becomes markedly in error. However, the results of fatigue tests of specimens with holes and grooves show that the theory of elasticity is always on the safe side.

Flow at High Temperatures

The resistance of metals to steady stresses and high temperatures has been widely studied and some study has also been given to the resistance of metals to repeated stresses at high temperatures. As temperatures rise the phenomenon of creep begins to assume importance. Even at stresses beyond yield point metals after slip soon come to rest under plastic distortion. However, at high temperatures for all metals, and at atmospheric temperatures for some of the very soft metals (such as lead), there seems to occur a steady flow, small in quantity, but continuous, like the flow of a very viscous liquid rather than the "slip" of a plastic solid. As temperature increases, this flow, or creep, becomes a more and more important factor and the danger of starting an actual fatigue crack becomes of correspondingly less and less importance.

Fatigue fractures do occur under moderate temperatures and the fatigue strength drops somewhat with increase in temperature, though apparently no more rapidly than does the static strength. Above about 1000 degrees Fahr. to 1200 degrees Fahr. for ferrous metals, fatigue failure seems to disappear from the picture, and failure by gradual flow or creep becomes the dominant factors as the metal is placed under stress.

One of the striking developments of the last ten years has been the widespread use of heat treatment of steel, not only for the purpose primarily of making better cutting tools, but also for the purpose of developing a stronger material of construction. It

Fatigue Explanation Not Crystallization

STUDY of the fatigue of metals was started nearly ten years ago under the joint auspices of the University of Illinois, National Research council, Engineering Foundation and General Electric Co. The term "fatigue" had come into general use for denoting the mysterious action which led to sudden failure of metals under oft-repeated loading. At that time there was no certainty whether there was any such thing as a definite fatigue limit, although it was believed that fatigue strength and elastic limit of metals were closely related. Today, the picture of fatigue failure is entirely different from the old idea of "crystallization." The accompanying article, a portion of a paper presented before the fall meeting of the American Iron and Steel institute in New York, Oct. 25, sets forth the modern conception of the subject. The author, H. F. Moore, is research professor of engineering materials, University of Illinois, Urbana, Ill.

is possible by suitable heat treatment to triple both the static strength and the fatigue strength of high-carbon and alloy steels. The advantages of certain alloy steels seem to consist in their readiness to be benefited by heat treatment under shop conditions. Under controlled laboratory conditions plain carbon steel can be made practically as strong as any alloy steel but the ranges of temperature used and the technique of the heat treatment must be extremely precise. Moreover, the change in crystalline condition of plain carbon steel is so rapid that only comparatively small pieces can be effectively heat treated. In the case of alloy steels, satisfactory heat treatments can be obtained with a wider range of temperatures and less closely controlled technique than is the case for plain carbon steels; and slower change of crystalline condition makes possible an increase in size of piece which can be subjected effectively to heat treatment.

In all steels, and probably in all other metals, whenever a heat treatment or other treatment improves the strength of the material it also makes the material more sensitive to the damaging effect of localized stress. "Stress raisers," such as grooves, screw threads, and fillets, affect the fatigue strength of high-strength material by a much larger percentage than they affect the strength of low-strength material. High-strength material is not only stronger but it is also more "tender" and susceptible to injury, and must be handled very carefully by the designer and the machinist.

Corrosion-Fatigue

In addition to the complexities introduced into the study of the fatigue of metals by the considerations previously noted, during the last two or three years the chemist has added another factor to the problem. During the earlier years of the war, Parker Haigh, the British metallurgist noted a curious failure of railway axles exposed to simultaneous repeated stress and the corrosive action of the drainage from passenger car wash rooms. In 1926 McAdam of the naval engineering experiment station at Annapolis noted that steel fatigue specimens exposed to a stream of water during tests failed at stresses much below those of specimens in the air. He found on examination evidences of corrosion and named this effect corrosion-fatigue. Somewhat earlier Parr at the University of Illinois had noted the curious and rather startling failure of boilers supplied with certain feed waters of quite high purity. Later he found that in such boilers intercrystalline cracks were developed in the steel by a combination of high static stress and corrosive action, although the number of cycles of stress was hardly high enough to cause a "fatigue" problem.

McAdam's tests have been very extensive and have shown very startling results due to corrosion acting simultaneously with repeated stress. Corrosion alone, or stress alone, is not nearly so disastrous as the two acting simultaneously. One of the striking features of his studies is that many of the fine heat-treated alloy steels are especially affected by corrosion-fatigue. Under the action of so mild a corrosive agent as a stream of fresh water, practically all the advantages of heat treatment and the alloying elements are gone.

Speller at the National Tube Co. works has been experimenting with chemical inhibitors of corrosion-fatigue with no small degree of success. All these investigations have brought out that fact that the nature of the coating which is formed by corrosion, which always takes place, has a great deal to do with the damage caused. If the thin coating of oxide is hard and tough it acts as a protection against further corrosion. If it is loose, or if it becomes cracked, corrosion goes on at an accelerated rate at discontinuities in the coating. Protective coatings against corrosion-fatigue seem quite effective, but more experimentation should be done on this point. Even a heavy coating of grease seems to have considerable protective effect.

Slip lines and fatigue crack in duralumin

The fine "slip lines" which mark the sliding of the laminae within the crystalline grain of metal are show as is also a fatigue crack which, in general, runs parallel to the slip lines. In duralumin the fatigue crack becomes visible before the slip lines appear and hence the crack is much wider than the slip lines. In iron and steel, slip lines usually appear before the fatigue crack is visible.

In the earlier days one of the fundamental conceptions of the mechanics of materials was a "real" elastic limit, below which the homogeneous material suffered no damage at all under any number of repetitions of stress. Later investigations by the use of the microscope have rather thoroughly discredited the existence of any such real elastic limit and have shown that plastic inelastic action is quite a different phenomenon from the actual fracture of materials. This will be discussed in the concluding paragraphs. In any event, there is found very little correlation between the results of fatigue tests of iron and steel and the value of elastic limit determined

(*Concluded on Page* 1151)

Machine Designer Finds Fatigue Important

TO THE structural engineer, fatigue failure is of comparatively little importance. Nearly all his failures are failures by inelastic distortion. His most disastrous failure is caused by inelastic distortion in a long column followed by a crumbling collapse. To the machine designer, on the other hand, fatigue failure is of very great importance. Probably there are many more fatigue failures of machine parts than failures by inelastic distortion. "Live" axles and shafts under bending loads constitute a very common source of fatigue failure, and too much emphasis cannot be placed on the necessity for designing axles and shafts with large fillets and on seeing to it that they are machined with smooth junctions between fillets and straight portions. The machine designer cannot place too much emphasis on the necessity of using care in the location of keyways, holes, and screw threads. Perhaps in no field is the problem of fatigue of metals more pressing than in the newest development, the aviation field. The demands of aviation call for a maximum of lightness. At the same time the conditions of repeated stress are extremely severe. If the designer of aviation machinery can meet the problems of fatigue of metals, he is indeed a master designer.—H. F. MOORE.

Metal Fatigue, Welding, Salvage, Sl

PROF. H. F. MOORE

METALS, their peculiarities and their application have constituted the life study and work of Prof. H. F. Moore, research professor of engineering materials, University of Illinois, Urbana, Ill. He therefore is well qualified to present the subject around which his paper "Fatigue of Metals" has been written. He was born in Penacook, N. H., in 1875 and received his higher education at the Concord, N. H., high school and the New Hampshire college, now the University of New Hampshire, from which he was graduated in 1898 with a B. S. degree and which granted him an honorary D. Sc. degree in 1922. He also was graduated from Cornell university in 1899 with the degree of mechanical engineer and that institution conferred upon him a master of mechanical engineering degree in 1903. He taught science and mathematics at Colby academy, New London, N. H., in 1900 and from 1901 to 1903 was instructor in machine design at Cornell university. In 1904 he became mechanical engineer for Riehlé Bros. Testing Machine Co., Philadelphia. From 1904 until 1907 he served as instructor and assistant professor of mechanics at the University of Wisconsin, Madison, Wis., and in the latter year he was appointed assistant professor in the materials testing laboratory of the University of Illinois, where in 1915 he was appointed professor of engineering materials, in which capacity he since has remained. Since 1919 he has been in charge of the investigation of the fatigue of metals in that institution. He did wartime work with the United States naval consulting board and the bureau of standards. He has served the American Society for Testing Materials as vice president and in 1927 was elected its president. He is a member also of the American Society of Mechanical Engineers, American Society for Steel Treating, the Society for the Promotion of Engineering Education, History of Science society, the British Institute of Metals, the Illinois Society of Engineers and is a fellow of the American Association for the Advancement of Science.

Professor Moore has designed a number of large testing machines and strain-measuring instruments and has investigated the weakening effect of keyways, the strength of rolled zinc, steel columns, web-strength of I-beams and fatigue of metals. He is author of "Text Book of the Materials of Engineering," published by McGraw-Hill Publishing Co.; a chapter on materials in Merriman's Civil Engineers' Hand Book; 11 bulletins of the Illinois Engineering Experiment station; numerous articles in the technical press and of many papers presented before various technical societies. He is a member of the following honorary scientific societies: Sigma Xi, Tau Beta Pi, and Phi Kappa Phi and belongs to the University Club, Urbana, Ill., and the Players' club of the University of Illinois.

* * *

WITH the exception of about three years when he was employed by the New York Central & Hudson River railroad, 1906-9, J. H. Deppeler's entire business experience has been gained in the oxyacetylene and thermit welding field. He therefore is considered an authority on the subject covered by this paper, "Thermit Welding and the Steel Mill". He has given much attention to steel mill practice as it was entered by welding. He was graduated from Stevens Institute of Technology in 1906 and then occurred his 3-year identification with the railroad, during which the New York terminal was electrified. He has been affiliated with the Goldschmidt Thermit Co. and its successor, the Metal & Thermit Corp., New York, since 1912 initially as superintendent of the Jersey City, N. J., plant and later as chief engineer and works manager, in these capacities he serves at present. Recognition of his knowledge and ability in the field of welding, was given when he was elected a director of the American Welding society early in 1919 and in October of that year he was elected a vice president. That society later elected him its second president for the 1920-21 term, to succeed Prof. Comfort A. Adams. Mr. Deppeler is a member also of the American Society of Mechanical Engineers and belongs to a number of social and business clubs.

J. H. DEPPELER

* * *

DURING the almost 14 years Emanuel J. Janitzky has been metallurgist at the South works, Illinois Steel Co., Chicago, he has made many studies of open-hearth furnace slag and has conducted many tests. His paper on "A Study of Basic Open-Hearth Slag by Solidification Tests" was as interesting as it was comprehensive. Mr. Janitzky was born in Mahr, Ostrau, Austria, Dec. 20, 1880. He completed his higher education at the Montanistishe Hochschule, Leoben, Austria, graduating as a metallurgical engineer. In 1900 he was employed as a metallurgical chemist by the Carnegie Steel Co., Duquesne, Pa., and later discharged similar duties for the Republic Iron & Steel Co., Youngstown, O. He next became affiliated with the Lackawanna

e, Slag and Service Constitute Program

DR. E. A. SPERRY

Steel Co., Buffalo, as fuel expert, and he subsequently served as furnace and fuel testing engineer for the Illinois Steel Co., Gary, Ind. After that he, in turn, became metallurgical engineer for the Jones & Laughlin Steel Corp., Woodlawn, Pa., and the Minnesota Steel Co., Duluth. On Dec. 1, 1915, Mr. Janitzky returned to the Illinois Steel Co., to become metallurgist at South Chicago, Ill., and on Feb. 1, 1921 he was promoted to be metallurgical engineer, the position he now holds. He is a member of the American Society for Steel Treating and in 1922 that society conferred upon him the Henry Marion Howe medal, established by its board of directors the latter part of 1922. The initial medal was not awarded until 1923 at the Pittsburgh convention but was made as of 1922 and bestowed upon Mr. Janitzky for his paper on "The Influence of Mass in Heat Treatment." He also is a member of the Verein Deutscher Eisenhuttenleute.

* * *

DR. ELMER AMBROSE SPERRY, internationally known engineer, inventor and scientist, who in December, 1928, was elected president of the American Society of Mechanical Engineers, was awarded, on Oct. 25, the Gary bronze medal by the American Iron and Steel institute for the best paper presented before it during 1928. This paper comprised his discussion of the address on "Uniformity, Continuity and Magnetic Testing" delivered by Alfred V. deForest before the October, 1928, meeting of the institute. Mr. Sperry is chiefly known for his invention of the Sperry gyroscope and other marine appliances. The Gary medal was established at the May, 1928, meeting of the institute.

* * *

MUCH more experience than that gained during the eight years he has been supervisor of inventories of the United States Steel Corp., New York, is back of the paper on "Waste Prevention and Salvage as Applied to the Steel Industry" presented by Frank Parrish. Preparation for that position was obtained by him when in 1917 he became purchasing agent for the Canadian Steel Corp. Ltd., Ojibway, Ont., devoting part of his time to the purchase and disposition of scrap materials. Mr. Parrish was born in Ganges, Allegan county, Mich. As a young man shortly after completing his education, he was employed at the American plant of the American Bridge Co., Chicago. He remained until 1917, rising to the position of assistant purchasing agent. In 1917 he commenced his affiliation with the Canadian Steel Corp. Ltd. and in 1921 went to New York in his present capacity with the main offices of the United States Steel Corp.

* * *

OUTSIDE of a comparatively brief period of employment as engineer of tests with the Pennsylvania railroad, E. F. Kenney, who so ably presented the paper on "Steel's Growing Service to Civilization," has spent his entire industrial career with one company or the interests merged with it six years ago. He was graduater from the University of Pennsylvania with a bachelor of science degree and later was granted a degree in chemical engineering. After graduation he was appointed engineer of tests by the Pennsylvania railroad but later became metallurgical engineer of the Cambria Steel Co. and the Midvale Steel & Ordnance Co. When these companies were acquired by the Bethlehem Steel Co. in 1923, his services were retained in that same capacity.

FRANK PARRISH

E. J. JANITZKY

India May Remove Duty on Tin Plate

The British Indian legislative assembly has recommended an amendment to the steel protection act, 1927, withdrawing the protection now accorded the British Indian tin plate industry, according to a cablegram to the department of commerce from Assistant Trade Commissioner Robert C. Cockburn, Calcutta. In order to become a law the bill must now be passed by the council of state and then receive the assent of the governor-general in council.

The present protective duty is 48 rupees per ton. The rupee equals 36 cents at par.

Stabilization for Steel Is Urged

Schwab, Presiding at American Iron and Steel Institute, Wants Industry To Be "Profit-minded" —Churchill Speaks for Naval Accord

STABILIZATION, sounded by Charles M. Schwab as the keynote of the fall meeting of the American Iron and Steel institute at New York, Oct. 25, assumed unexpected significance in view of the drastic decline the day previous in security values on the New York and other stock exchanges.

In his opening address as president of the institute, Mr. Schwab, also chairman of the Bethlehem Steel Corp., admonished the industry to be profit-minded, warned that price fluctuations would be disturbing and advised that the cost sheet be used as the compass of the industry.

Impressed as an extemporaneous speaker, James A. Farrell, president of the United States Steel Corp., concurred in general with Mr. Schwab's observations visualized business as good and cautioned that the industry must retain its equilibrium if it were to continue in a healthy position.

In the interchange of opinion, always a feature of institute meetings, there were general reassurances that demand for iron and steel is seasonally good from all major consumers save the automotive industry, and that the slight letup in requirements is not disheartening in view of the record nine months of production already behind the industry.

At the institute banquet the Hon. Winston Churchill, former chancellor of the exchequer of Great Britain and in charge of production of munitions in the Lloyd-George regime during the World war, was the principal guest of honor. He urged naval accord between Great Britain and the United States and lauded the war efforts of Mr. Schwab and the American steel industry.

Sir Frederick Mills, chairman of the Ebbw Vale Steel Co. and honorary member of the institute, and John W. Davis, Democratic candidate for President in 1924, were other speakers at the banquet. It was announced that Dr. Elmer A. Sperry had been awarded the Gary bronze medal for the best paper presented before the institute in 1928, formal presentation being deferred until Dr. Sperry's return to the United States.

Approximately 2000 members and guests attended the institute's activities of the day.

Cost Sheet Should Be Industry's Compass

By Charles M. Schwab

IN MY long association with the steel industry I have never known it to enjoy a greater stability or more promising outlook than it does today. We are approaching the close of the best year the industry has ever experienced. It is estimated that the steel production for 1929 will exceed 57,000,000 tons. This is 10 per cent greater than it was in 1928, the best previous year. This high production establishes an important landmark but it is by no means the most important or most significant aspect of the year in steel.

Greater output is, of course, gratifying to every steel man. As I view the industry, however, its most fundamental progress has been made this year in the degree of stability and balance which is now the outstanding characteristic of our business.

Soundness Bespeaks Prosperity

This fundamentally sound condition is largely responsible for the uniform prosperity which has been shared by all branches and all companies in the industry. It is significant that the industry's favorable showing has not been due to higher prices; our improved earnings are due to three factors: Greater demand for steel, enlarged output and lower costs. There has been some slight increase in prices, but on the whole prices have been largely stabiilzed and held on an even keel. Here certainly is concrete evidence that when the whole steel industry within itself practices sound business principles, the resulting benefits are shared by every element in it.

Steel consumers as well as producers have benefited from this stability, because it has enabled them to operate their own business on a firm nonspeculative basis. Throughout the year sound buying methods have prevailed. Steel has been purchased for current consumption. No big inventories have been built up. At the moment there is a slight letup in demand but we are in this fortunate position: That because prices are stabilized and contain no element of inflation there is no reason to give ground on prices whatever slight but inevitable fluctuations may occur in demand. In other words, it would be unfortunate if we were to let such fluctuations disturb the healthy balance which has been established.

Stability is the order of the day in every industry. Moreover, it is quite as ethical and necessary for the steel industry to think in terms of stabilized profits as it is to strive for stability in other respects. It is high time we scrapped the idea that the steel business must be either a prince or a pauper. Everyone recognizes that the ability of the steel industry to meet the greater demand for its products at lower costs has been helpful all around. It has benefited our customers and it has enabled us to make a better return on our investment than heretofore. There is absolutely no reason why this favorable situation cannot be maintained year in and year out, even in times when business may not be quite as good as it has been right along.

Stability Helps in Slack Periods

This stability is beneficial not only during periods of greater demand, it is even more so in periods of lessened demand. We have all seen how lower costs have favorably affected earnings when we have a high output. We also know that if this demand falls off our costs are bound to increase, no matter what we may do. More than ever we need a stabilized price structure at such a time, for no industry can stand the double onslaught of high costs and lower prices and still make headway. So I repeat that it is fortunate that our present prices contain no element of inflation that will bear purging in the event of a lessened demand. In other words, let us continue to be profit-minded. Let us be mindful of our costs as well as volume in seeking

to further stabilize the industry in every respect.

Since I have been your president I have given a great deal of thought to this problem. It seems to me that if we are to make our efforts permanently effective we must know and be able to evaluate the true economic facts of our business and have a complete understanding of their significance upon production and distribution. I am a firm believer that one of the best ways of assuring progress on an even keel is to let the cost sheet be our compass. The cost sheet will tell us whether productive capacity in any branch of the business is in excess of current requirements. It will reveal uneconomic and obsolete practices. It will forestall an unsound price structure. It will discourage the attempt to produce to capacity all the time, regardless of demand.

It is time to discard the idea that costs are not important in determining sales policies because the latter are fixed by competitive prices. The fact is that competitive prices frequently fail to yield a proper return because they do not give adequate consideration to costs. On the other hand, it seems to me that no sounder basis for determining sales prices could be found than accurately kept figures on what it costs to manufacture our products.

Without sound data respecting costs it is quite possible for us to make unprofitable products and to sell profitable products at unprofitable prices. No industry can afford to be ignorant of what it costs to produce what it has to sell.

Advocates Uniform Costs

I cannot advocate too strongly, therefore, a consideration at this time of the advantages of uniform cost accounting principles applied to the steel industry. They represent a healthy influence to which the members of this institute should direct themselves. I am sure that a knowledge of the true costs of production and distribution based upon uniform cost accounting would have a far reaching effect in promoting our stability and economic well being.

We are living in an age when neither nations, nor industries, nor the individual units of the same industry can afford to live in watertight compartments. This institute recognizes the principle of mutual co-operation for the general good. I would interpret that to include mutual education as well for it seems to me that the more we know about our business, the better able we should be to promote its welfare and the welfare of industries to which we are related.

If we analyze steel's accelerated consumption we find it is due to two outstanding reasons: First, the extension and replacement of steel in its traditional fields, such as building, automobiles, railroads, highways, bridges, pipe lines, etc., and, second, the growing demand for steel for new uses for something NEW.

The replacement factor alone provides a huge annual backlog for our business. You would be astounded if we were to compile figures to show the amount of steel that is used recurrently every year for replacement and extension. I dare say that this field alone accounts for an enormous part of present day production. For instance, just as the replacement factor in the automobile industry is increasing in importance as more automobiles are put into service, so it is with steel—the more steel that goes into service the greater becomes the demand for its replacement and recurrent use. Fortified with this constant demand and the new uses to which steel is being put for things that are new, the industry occupies indeed an impregnable position as a basic necessity to our national growth.

Of course underlying all other considerations, it is upon the prosperous condition of our people generally that the future of steel and every other industry depends. Under present-day living standards, where one want makes way for another, high and sustined purchasing power is essential. It is highly gratifying, therefore, that labor generally is enjoying good wages, a surplus of which is finding its way into savings accounts and other fields of sound investment.

Labor as a whole is quite fully employed today. The mechanization of industry has resulted not only in lightening the load of the worker and affording him more leisure, but this same development has created many new jobs. You will find that the percentage of the population gainfully employed today is probably as great as it has been at any time in the last decade. Certainly this would not be true if the development of the machine were creating fewer instead of greater opportunities for gainful employment.

It is true that our people generally are enjoying more leisure today than ever before, but it is also true that this is largely consumable leisure. In other words, people have greater means and more time to enjoy the good things of life, to which they are entitled. Generally speaking, I believe our people are putting their leisure to wholesome account. Moreover, the increased consumable leisure of our people is an important factor in our national prosperity as affording a substantial market for products and goods heretofore available only to a limited group of the population.

High Production Essential

Of course, here too a healthy balance is required. To enjoy the fruits of prosperity, to have leisure, to continue to receive high wages and to maintain our new high standards of living, it is essential that production itself be maintained at a continually higher level.

We must not be led astray by the thought that we can give up work altogether or that there is no limit to the leisure obtainable under our present social and economic system. We must have stability in our labor structure as well as in every other phase of our industry.

If the equilibrium between production and consumption is maintained, there is no reason, in my opinion, why our present prosperity should not continue indefinitely. Fundamentally there is every reason why the use of steel will increase. The per capita consumption is growing rapidly—steel is finding its way into many new fields and through its adaptability, economy and its elemental security, is supplying a service which no other metal can perform.

Business Sound, Some Lines Exceeding 1928

By James A. Farrell

WE ARE to be congratulated on having the opportunity to listen to Mr. Schwab's very able, constructive and scientific paper. I think if we can follow the precepts which he has laid down in his address that we will have entered a new era in the steel business.

There is a good deal of pessimism around at the present time; it affects some people more than others. I cannot see where it affects the steel business at present. With the exception of one or two of our commodities we are just as busy as we were; the prospects are just as good as they were, and I think that we are going to have a continuance of the present business. I think business is good when we can operate our plants 75 or 80 per cent. A year ago, with the capacity which existed at that time, we would be running about 110 per cent now. But, of course, we kept up with the demand; we have gone on expanding to meet the necessities of the country, and these necessities are increasing all the time. There are some lines of business which are even better than they were six months ago.

As Mr. Grace said yesterday in his report to his stockholders, the shipbuilding business has not been as good in 15 years as it is at the present time. The shipbuilding yards on the Atlantic coast, and they are all large yards, have sufficient work at the present time for six months, and there has certainly appeared a demand for new vessels.

I think that Mr. Schwab has laid down principles which were more or less known to us, but it is like a great many other rules and regulations; they are more observed in the breach than otherwise. Now if the people in the steel industry cannot maintain their equilibrium, why we won't have a good business, because

(*Concluded on Page* 1113)

Hardware Group Seeks To Improve Sheet Marketing Practices

Metal Branch of National Hardware Association in Annual Meeting Discusses "14 Points" Proposed by Trade Practice Conference Committee

DIGEST of the 14 points suggested to its trade practice conference committee as the means for eliminating many of the difficulties now extant in the marketing of steel sheets through warehouse distributors absorbed the attention of members of the metal branch of the National Hardware association at the thirty-fifth annual convention at Atlantic City, Oct. 21-24. These 14 points and the committee's findings on them appear on Page 1112 of this issue of IRON TRADE REVIEW.

The 14 points first were presented by the author, L. D. Mercer, Central Alloy Steel Corp., Massillon, O., at the Detroit meeting last spring when they were turned over to the trade practice conference committee for analysis. Robert H. Lyon, Lyon, Conklin & Co., Baltimore, is chairman of the committee.

Recommendations Made

Recommendation then was made by the committee of a trade practice conference under the auspices of the federal trade committee with the object of ameliorating the undesirable conditions under which steel sheets are distributed through warehouses. The metal branch approved the motion on this subject and appointed a committee of four to work toward the desired end. Motion also was passed to request the following organizations each to appoint a committee of four to work with the metal branch in arranging a trade practice conference: National Hardware association, American Steel and Heavy Hardware association, National Association of Flat Rolled Steel Manufacturers, and National Association of Sheet Metal Contractors.

Want Present Standards

The simplification committees of the metal branch suggested that the present standards be maintained without additions or deletions. These suggestions applied to steel sheets, terne plate, eaves troughs and conductors. The eaves trough board warned members against the 14-ounce copper products being offered in some markets as substitutes for the standard 18-ounce troughs and conductors.

After rather limited discussion, the metal branch approved a motion to request the American Railway association to raise the carload minimum on steel sheets from 36,000 to 60,000 pounds. If granted, this action will operate to the disadvantage of the smaller distributors of sheets, many of whom would be financially embarrassed by the increased inventory thus forced upon them as well as by the overcrowding of storage facilities. During the discussion, it was pointed out by experienced shippers that it is frequently impossible to load 60,000 pounds of sheets, especially when corrugated, into a single car. Although the use of an idler or over-flow car may be permitted and may involve no additional freight charges, the plan is frowned upon by many.

At this same meeting, George McCorkle, member, federal trade commission, outlined the services his organization is rendering to various industries. W. C. Markle, secretary, National Association of Sheet Metal Contractors, told how distributors can co-operate to better advantage with the sheet metal contractors. Chairman of the metal branch, F. O. Schoedinger, delivered his annual address.

Overhead Expenses Given

At a general meeting of the National Hardware association, members were given average overhead expense figures for the years 1914 to 1928, inclusive, compiled by the overhead expense committee from data supplied annually by members. The 1928 year showed a net profit of 1.43 per cent, an increase over the preceding year of 0.22 per cent. Total operating expenses dropped to 20.02 from 20.24 per cent, while turnovers gained slightly from 3.29 to 3.31 per cent.

Of especial interest to distributors and wholesalers handling products of iron and steel was the address of H. A. Squibbs, American Steel & Wire Co., Chicago, on the "Distribution of Nail and Wire Products." The average distribution of nails per year during the past five years was 14,000

(*Continued on Page* 1112)

New Officers

AMERICAN HARDWARE MANUFACTURERS' ASSOCIATION

President
J. E. STONE
Stanley Works, New Britain, Conn.

Vice Presidents
A. E. ALVERSON
Greenlee Tool Co., Rockford, Ill.
J. P. MCKINNEY
McKinney Mfg. Co., Pittsburgh
R. G. THOMPSON
Lufkin Rule Co., New York

Executive Committee
W. R. HILL
Sargent & Greenleaf Inc., Rochester, N. Y.
F. O. LINCOLN
Morse Twist Drill Co., New Bedford, Mass.
H. J. STRUGNELL
Remington Arms Co., New York

Secretary-Treasurer
CHARLES F. ROCKWELL
342 Madison avenue, New York

New Officers

NATIONAL HARDWARE ASSOCIATION OF THE UNITED STATES

President
A. H. NICHOLS
Buhl Sons Co., Detroit

First Vice President
BRACE HAYDEN
Dunham, Carrigan & Hayden Co., San Francisco

Second Vice President
PAUL A. GRIFFITH
Shields & Bro., Philadelphia

Executive Committee
C. J. WHIPPLE
Hibbard, Spencer, Bartlett & Co., Chicago
JOHN T. MARTINDALE
Van Camp Hardware & Iron Co., Indianapolis
G. SUMNER WILSON
Decatur & Hopkins Co., Boston

Iron, Steel Products Hold Center of Stage at Petroleum Show

THE dominant roles assumed by iron and steel in the oil and gas industry were shown forcibly at the International Petroleum exposition held in Tulsa, Okla., Oct. 5-12. Exhibits of iron and steel products surpassed any previous event, the valuation of these exhibits being estimated at $7,000,000 or 75 per cent of the entire display. Attendance of 125,000 set a new record for the eight-day period. More than 300 exhibitors reserved space. The success of this year's show was more evident when it is considered that it was limited to those interested in some phase of the petroleum industry. Drilling machinery, pipe and power plant equipment made up the bulk of the exhibits which included everything from small valves to large pipeline pumping units.

Tubular Products Displayed

Much space was used by pipe and casing manufacturers in displaying oil country tubular products, these including Bethlehem Steel Co., Bethlehem, Pa.; National Tube Co., Pittsburgh; Jones & Laughlin Steel Corp., Pittsburgh; Youngstown Sheet & Tube Co., Youngstown, O.; Pittsburgh Steel Products Co., Pittsburgh; and Spang, Chalfant & Co., Pittsburgh. In addition to tubular products, Bethlehem Steel Co. also exhibited alloy and tool steels, special oil country forgings and bolts and nuts. A. O. Smith Corp., Milwaukee, showed welded gas and oil line pipe and cracking still vessels. Naylor Pipe Co., Chicago, showed motion pictures of its product in oil field service.

The importance of welding in the oil and gas industry was brought out by displays of several equipment manufacturers, notably Linde Air Products Co., New York; Air Reduction Sales Co., New York; Lincoln Electric Co., Cleveland; Fusion Welding Corp., Chicago; General Electric Co., Schenectady, N. Y.; Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.; Vic-

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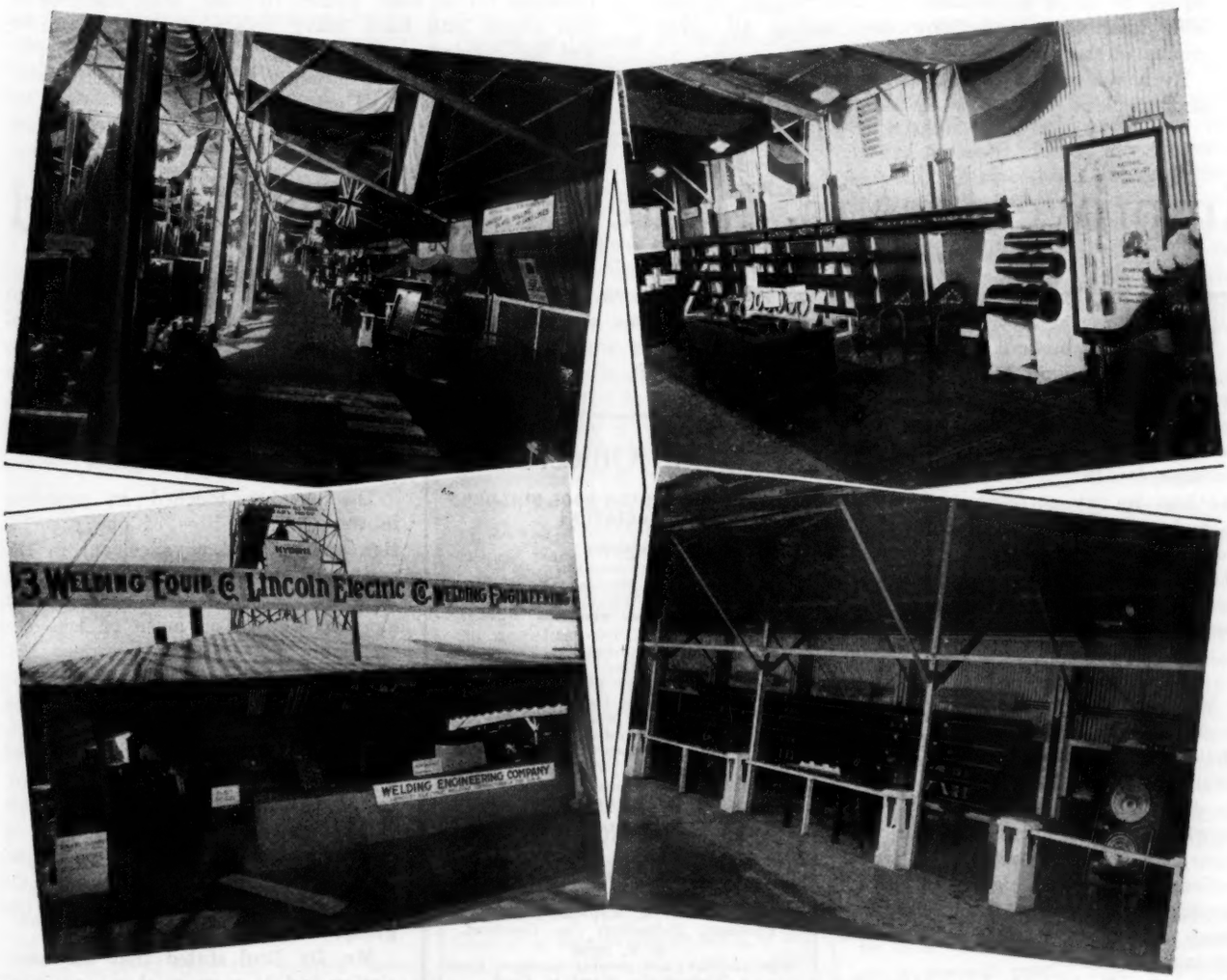

Four views of exhibits at the International Petroleum exposition at which iron and steel products used in the oil industry occupied a feature position

Tool Builders Appear Optimistic Regarding Industry's Future

National Machine Tool Builders' Association in Annual Convention Sees No Severe Recession in Business—New Officers Are Elected

EFFECTIVENESS of co-operative action in meeting trade problems was reflected in the reports submitted at the twenty-eighth annual convention of the National Machine Tool Builders' association, at Briarcliff lodge, Briarcliff Manor, N. Y., Oct. 21-23. Progress was indicated in such various activities as cost accounting, standardization, statistical research and personnel training.

Of special satisfaction to members generally has been the practical elimination of price cutting among machine tool builders in recent months. Never, it was brought out, with the possible exception of the war period, have machine tools builders adhered so rigidly to listed quotations. In this respect, it was said, machine tool builders are leading all other groups in the mechanical equipment field.

By a vote of 39 to 28 it was decided to hold the next machine tool show in three years instead of two. The show will be held in Cleveland in 1932, the exact time to be decided later. The question as to whether the next show should be held two or three years hence was of considerable debate, consuming the major part of one session. Such questions as to whether nonmembers should be allowed to exhibit machine tools at the next show and how long the show should continue were deferred.

With 150 members, representing 85 companies, present, attendance was one of the best in the history of the association. Sentiment was optimistic. While the extreme peak of good business now appears to be past, members did not look for any severe recession for at least months to come. Most machine tool plants still have heavy orders on their books and the current rate of buying, it is said, was good, reflecting in no small measure the beneficial effects of the recent Cleveland exhibit.

Improvement in Trade Practice Is Reported

THE high rate of machine tool activity over recent months was strikingly brought out by Ernest F. Du Brul, general manager of the association. He declared that business in the first nine months of this year exceeded that of all 1928 and that business for the past 18 months was the best in any corresponding period in at least 11 years. From the standpoint of profits, the speaker declared, the last 18 months were perhaps the best on record, even exceeding the war period.

Is Higher Than in 1927

While trading is now undergoing a modest recession, Mr. Du Brul believed that machine tool business is not likely to reach the low point made in 1927. Moreover, he said that a slowing up in business would be welcomed in some respects as it would relieve the present high pressure on production and in so doing eliminate some of the high costs which such pressure produces.

Mr. Du Brul warned members to watch closely developments in the way of cancellations, adding that if cancellations became heavy, production policies should be adjusted according to net demand. In 1919, he pointed out, cancellations in the machine tool industry cut greatly into products. Recently, Mr. Du Brul declared, there have been some cancellations by aviation interests.

Gets Monthly Figures

The speaker touched on progress in the cost activities of one association and outlined advancement in the matter of statistical research. He said that the association is now getting monthly figures of more or less detail from the following groups: Engine lathes, shapers, planer-type milling machines, die heads, surface grinders, tool and cutter grinders, turret lathes and planers. He urged all other competitive groups to go into this service so that they may know what is the demand for their types of machines; know their own participation in the total, and compare their individual trend with the trend of the group.

Mr. Du Brul stated that the association had 11 new member companies and one resignation within the past

New Officers

NATIONAL MACHINE TOOL BUILDERS' ASSOCIATION

President
C. A. JOHNSON
President, Gisholt Machine Co., Madison, Wis.

First vice president
R. W. DUNBAR
Works manager, Norton Co., Worcester, Mass.

Second vice president
ROBERT M. GAYLORD
President, Ingersoll Milling Machine Co., Rockford, Ill.

Treasurer
FREDERICK V. GEIER
Vice president, Cincinnati Milling Machine Co., Cincinnati.

Secretary
FRIDA F. SELBERT

Directors
ROBERT M. GAYLORD
G. E. RANDLES
President, Foote-Burt Co., Cleveland.
C. R. BURT
Vice president and general manager, Pratt & Whitney Co., Hartford, Conn.

year, making for a total of 144 members in good standing. Applications are now pending from two companies. A substantial increase in membership dues was unanimously adopted at this meeting.

Further improvement in trade practices was one of several interesting subjects discussed by President Henry Buker. Declaring that practically every machine tool builder is active in production, he believed that now is an ideal time for the industry as a whole to sets its house fully in order and to eliminate every abuse. Great progress has been made in eliminating the practice of "money losing trade-ins" in connection with selling machinery, yet in recent months, the speaker declared, high prices have been reported as offered for used machines where the customer would agree to buy the manufacturer's new machine.

"If every machine tool builder," Mr. Buker stated, "in making an offer for a used machine, would name the price at which he would be perfectly satisfied to obtain the used machine, even if he did not sell a new machine to a customer, we would then all be working on the same business basis. There are sections of the country where the Chicago method of buying used machines cannot go into effect, but there is no reason why any manufacturer should offer any more for a used machine than it is actually worth to him, either in his own factory or for resale purposes.

"It speaks highly of the progress that we have made in recent years," the speaker continued, "that today there are very few machine tool concerns who would not feel cheapened in their own minds as well as in the minds of their competitors if they were to deliberately cut the published price of their machines in competition."

Rigid Schedule Important

Discussing the many advantages of good apprenticeship courses President Buker stressed the importance of a manufacturer laying down a rigid schedule and seeing that it be followed carefully. The very rigidness of such a course is much in its favor, the speaker declared, for it takes a young man at the age when he is susceptible to influence and trains him along definite lines. An apprenticeship course, properly handled, is the very best school from which to draw future factory executives, he added in his talk.

He believed that the general manager of business should either interview each apprentice at least two or three times during his apprenticeship training, or else he should delegate a committee of three, composed possibly of the factory manager, the sales manager, and the chief engineer, to talk with the boys occasionally and find out, as far as possibe, the boys' leanings and his aspirations as well.

"There have been many apprentices who have been failures in the shop," President Buker stated, "but who have proven to be exceptional designers or salesmen. The shop foreman often is inclined to judge a boy solely by a boy's ability to produce work accurately and cheaply. Some of our most brilliant men are naturally clumsy with their hands, and we have all known good executives who could tell others what should be done and how to do it, but could not do the work themselves if called upon to do so."

Summary Is Presented

A summary of responses to a questionnaire on installment or time sales was presented. Many believed that business on a cash basis is now too good to even consider the question of deferred terms or installment sales. Where companies sold their products largely through dealers the question appeared of relatively small interest in a number of cases, for the given reasons that dealers as a rule are usually good pay and usually discount their bills and that it is up to the dealers to give the extended payment if they so desire.

One opinion was that it is a mistake for manufacturers, selling direct to customers, to give extended payments, declaring that it was not necessary for the machinery builder to make himself the banker when banks are available for the express purpose of lending money. Another interest, opposed to the use of financing concerns, declared that all make a very healthy service charge, get 6 per cent interest on the full amount of unpaid balance, only pay the manufacturer 90 per cent of this balance and do not take the paper without recourse. On this basis, it was declared, no manufacturer, who is solvent and has reasonable bank credit. has anything to gain through partial payment sales handled by investment companies.

Dr. Virgil Jordan, economist for *The Business Week,* New York, discussing the importance of industrial statistics in business management, stated there was need of more intensive effort to extend and refine statistical information. He believed that trade associations could promote this work as no other agency, even including the government. He declared that there is no greater stabilization in important lines today than have ever prevailed.

Commenting on general conditions, he said that business was proceeding at a normal pace. The automobile,

(*Concluded on Page* 1109)

Appointed Secretary of Tool Builders

—*Bachrach*

FRIDA F. SELBERT, newly appointed secretary of the National Machine Tool Builders' association, is believed to be the first woman to have attained a major executive position in an association identified with the metalworking industry. A native Cincinnatian, Mrs. Selbert was graduated with highest honors in her class from the University of Cincinnati with a degree of business science. Aside from this she has many credits in liberal arts at that university.

She became affiliated with the machine tool industry and with the National Machine Tool Builders' association in 1921, *following closely Ernest F. Du Brul's appointment as general manager of the organization. Her ability to absorb and execute a vast amount of detail brought her early recognition among the members of the association.*

Some time ago she was appointed assistant secretary, under Mr. Du Brul. As association affairs developed and secretarial duties became too heavy for Mr. Du Brul to carry along with his other managerial activities, it was logical that Mrs. Selbert should be appointed to the newly created position as secretary. Mrs. Selbert also is secretary of the Cincinnati chapter of the National Association of Cost Accountants, and it is interesting to note, is the only woman to hold a similar position in that organization.

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Industrial Engineers Study Trends of Progress in Industry

Wide Variety of Subjects Covers Many Phases of Manufacturing at National Convention—New Officers Are Named

TRENDS in industry with reference to some of the major problems of today and tomorrow were observed by the Society of Industrial Engineers at the sixteenth national convention held at Hotel Statler, Cleveland, Oct. 23-25. Production, distribution and management, wage incentive plans, problems concerning skilled labor, and the effect of mechanization on industry were among other topics discussed.

The convention, considered by officials the most successful in the history of the organization, was characterized by the enthusiasm it created among the 300 attending. Highlights of the program were the fatigue dinner at which Prof. George H. Shepard, department of factory and industrial management, Purdue university, was chairman, and the annual banquet Thursday evening at which the retiring president Dr. W. F. Rittman, Carnegie Institute of Technology, Pittsburgh, presided. Numerous inspection trips were made in afternoons.

Officers were elected at the meeting of the board of directors Thursday afternoon, John M. Carmody, editor of *Factory and Industrial Management*, Chicago, being the new president. Eugene A. Rummler, Rummler & Rummler, Chicago, was re-elected treasurer, and George C. Dent, Chicago, was re-elected secretary for the thirteenth consecutive year. President-elect Carmody was the principal speaker at the banquet. His topic was "The Merger Age in Industry." C. E. Knoeppel, Knoeppel Industrial counsel, Cleveland, also gave an interesting talk on the subject of mergers.

Progress Has Revolutionized Machine Tools

A TOPIC pertinent to the machine age and a vital question uppermost in the minds today was brilliantly handled by Richard H. Lansburgh, professor of industry, University of Pennsylvania, in a paper, "The Machine Age and Its Effect on Industry." He based his facts on a study he is making of the mechanization of industry.

Portions of Prof. Lansburgh's remarks were as follows:

"The machine tool industry, which is the basis of all metalcutting, has seen its product revolutionized within the recent years. Practically every machine tool now on the market has been completely redesigned. Old-type tools such as engine lathes, radial drills, and milling machines have been made heavier, much more rigid, and the design changed providing for full automatic lubrication, all of which has thrown emphasis on keeping the tool operating constantly and thereby changing entirely the relative importance of tool and operator. Such a fundamental tool as the engine lathe has begun to be used with multiple tooling on front and back rests, and on many jobs has proved to be a healthy competitor of newer type semiautomatic or automatic tools.

"Geared motor drives and antifriction bearings have enabled speeds and feeds to be increased tremendously without any further changes in fundamental lathe design. Changes in design of radial drills have likewise caused them to prove effective competitors of multiple spindle drills on work where the runs are not extremely long. The uses of double bases and circular bases on which work can be set up by setup men while the radial drill operator is constantly drilling, are examples of adaptations of standard machine tools for specialized purposes. The combination of such devices and the betterment of the radials themselves have frequently resulted in an increase of production of from two and one-half to three times. The development of the hydraulic feed also is revolutionizing capacities of machine tools, old and new. This feed now is being utilized on 70 lines of machine tools whereas only a few years ago it was unknown. Similar advances have been made in milling machines, shapers, planers, and other standard type machine tools.

Develop New Machine Tools

"Most machine tool manufacturers also have developed new tools, the fundamental ideas behind which were unknown a few years ago. Numerous new type attachments such as automatic rotary feeds on milling machines and automatic indexing tables on milling machines and multiple drilling machines also have been developed. Full automatic machine tools have become common-place. Automatic screw machines and automatic chucking machines have been considerably improved in design and capacity. A half dozen types of automatic lathes have been developed wholly within recent years and have become fairly standard. In addition, a large number of companies produce primarily old line machine tools, such as engine lathes. Grinding has been revolutionized in all of its phases, both as to capacity of machines and types of operation. The development of centerless grinding has made possible production equivalent to from three to ten times production on old type grinders, while automatic features applied to external and internal grinding likewise have resulted in tremendous production increases. Use and design of holding devices, jigs, and fixtures has developed in a remarkable way through their combination with such attachments as rotary feeds or indexing tables, just referred to.

"In addition to all of these tremendous changes in machine tool design we have seen in the last year the first commercial utilization on a large scale of the use of cemented tungsten carbide cutting metal. The possibilities of this material are as yet largely unknown, but it is certain that undreamed performance can be secured through it on certain types of cuts.

A few metal manufacturers with large production of standard articles have gone even farther, developing entirely new manufacturing methods, courageous in the extreme and bringing to industries examples of mechanization and its resulting benefits that should be a lesson to all.

"In the metal trades skilled men are not being eliminated by these fundamental changes, as far as we can see, but skills are changing. Ordinary production jobs which formerly required men of long apprenticeship are handled by semiskilled or unskilled men, in the former meaning of the term, but new skills in machine handling and adaptation of men have arisen. The demand for fully skilled metalworking mechanics has naturally never been so large, and the supply has been totally inadequate to meet needs because of the lull which occurred in apprenticeship some years ago.

Personnel Man Important

"This lull happily now seems to be a thing of the past. This situation presents an ideal opportunity for good personnel practice and points the way in which the personnel man in metalworking industries may make of himself one of the most valuable executives in his organization. Vision is needed by him as never before to grasp the full significance of these basic industrial trends. He must make of the type of labor which is being elevated to the tending of machines, happy, contented workers and useful citizens, must develop training programs which will provide the skills so badly needed by his industry, and must work with the other general executives in developing fundamental programs which will provide steady work for the expensive machines and high-wage mechanics of the modern day. With the new machines have come some ideas concerning obsolescense in industry. Many factory executives do not introduce a machine or piece of equipment today unless they are sure it will pay for itself in a year or less. Great investments are made in machines today and tomorrow these machines are promptly made almost useless by development within the industry, due to the design and manufacture of still better machines. However, it is only in industries where the margin of profit is wide or where the increased productivity of the new machine is tremendous that such a policy of replacement can long survive."

Trend in industry demands more skilled mechanics was the contention of C. J. Freund, apprentice supervisor, Falk Corp., Milwaukee. The outstanding trend, he said, is undoubtedly mass production, and the rapid development of highly automatic machine processes. Inasmuch as the proportions of skilled mechanics in American industries is not known and will not be known until the 1930 census has been completed, it is extremely unfair to production industries to accuse them of destroying the trades, merely because a casual or superficial examination of production industries does not reveal a high percentage of skilled workers, Mr. Freund said.

Willing Workers Scarce

The high mortality of business is due to the fact that it is difficult to find people willing to work, Dr. Harry Myers, director of personnel, Frigidaire Corp., Dayton, O., declared in his address Friday morning. Rules set down by Charles J. McCabe, chief smoke inspector, City of Detroit, in his talk on smoke abatement practice, before the maintenance group, included provision of adequate furnace volume, use of fuel with suitable chemical and physical properties, correct furnace operation, and automatic fuel feeding whenever such an arrangement is possible.

Industrial Research Costs $60,000,000 Yearly

POINTING out that the manufacturer has a definite function in the distribution of his product, Irving S. Paull, president, Institute of Carpet Manufacturers of America Inc., Washington, described trends in distribution and their on the future of industry at the opening session Wednesday morning. One of the manufacturer's important probems is sending goods into communities in an orderly manner, Mr. Paull said.

Industry has two distinct phases —production and distribution, and of these the greatest waste today is in the latter. Speaking of wages, the speaker declared that high wages create new markets. "Is not the field of future progress that of satisfying mental requirements rather than physical requirements?" Mr. Paull asked in concluding his talk.

In the seven years between 1922 and 1929 remarkable industrial progress has been made in the United States, L. P. Alford, vice president, Ronald Press Co., New York, said in reviewing trends in industrial production and management. So striking have been the changes, so noteworthy the advancement, that many writers have referred to this period as marking the second industrial revolution. This characterization is probably overdrawn, for changes, remarkable though they be, are the result of forces and trends long established in American business and industrial life, he said. Turning to industrial research, he estimated that some $60,000,000 is being spent annually by manufacturers of the United States in industrial research activities.

Describes Noise Tests

Use of acoustical material in a study of effects of noise on industrial workers was described by R. F. Norris, C. F. Burgess Laboratories Inc., Madison, Wis., at the fatigue dinner Wednesday evening. Charts showing the plotted results of the series of tests made illustrated his talk. "Knowing the Job—The Story of a Time Study Man," was related by A. B. Segur, consulting engineer, Oak Park, Ill., who gave a demonstration of time study work.

A study of compensation methods and incentive plans was the topic under which Adolph Langsner, Eugene Dietzgen Co., Chicago, summarized the report of his independent study of these problems of industry, at the general meeting Wednesday evening. A clear indication that application of incentive plans is not universally understood was brought out by Mr. Langsner, through his inquiry in which he sent 1200 questionnaires to various industries throughout the United States. These disclosed that 40 per cent of employes are still working under hourly rates, and that a number of piece rate systems are still being carried on under the old "hit and miss" method.

Four manufacturers, for instance, producing a similar article under the same conditions with similar equipment, are using three different types of compensation methods. Two of them struggling under extreme competition are using the day rate method. After further explaining the difference between compensation methods and incentive plans, Mr. Langsner, reduced all compensation methods to four units, and stressed that the bonus or premiums plan is the most effective.

Alfred G. Trembly, Teletype Corp., Chicago, compared and evaluated wage incentive formulae. Eugene E. Brey, Wilson-Western Sporting Goods Co., Chicago, emphatically stressed the point that it is necessary to establish a system of mechanics in order to make the design of a wage incentive plan complete for administration.

Seeks To Improve Sheet Marketing Practices

(*Concluded from Page* 1104)

kegs, members were told. It is the opinion of Mr. Squibbs that, properly handled, nails are profitable from the wholesalers' viewpoint. A survey shows average stocks of jobbers amount to 100 tons, representing an investment of approximately $6000, according to the speaker. With a markup of 40.00c a keg a profit of 11.7 per cent is returned on the investment, and with an annual turnover of eight the gross profit becomes 93.6 per cent, The net profit for the year with allowances for usual expenses is 25.6 per cent, declared Mr. Squibbs.

In urging jobbers to carry adequate stocks and a comprehensive variety of nails, Mr. Squibbs said that many of the orders received by nail makers from distributors for direct mail shipments showed that the customers expected the jobbers to supply their requirements from stock. He further stated that a good margin was to be had on mixed car shipments from warehouses.

The competition offered distributors by mail order houses was recognized by the speaker as a serious factor. In his opinion, mills should not sell to the mail houses at prices lower than those extended to jobbers. New editions of the mail order catalogs show advanced prices which will enable the jobbers to meet this competition more effectively in the future than they have in the past.

Wholesalers, in Mr. Squibbs' estimation, have overlooked some of the advantages in handling wire fence. Not only do new installations offer real sales opportunities but the replacement business is equally attractive. Fence posts, too, are worthy of the jobbers' consideration.

Speaking before the American Hardware Manufacturers' association in joint convention with the National Hardware association, D. A. Merriman, vice president, American Steel & Wire Co., Chicago, and president of the association, told the delegates that he was optimistic for business the next few months and believes basic industrial factors are sound.

Business Slump Seasonal

The present slump in business is seasonal, he stated, and the purchasing power of the farmer will continue without diminution. He also stated that there are many opportunities for development in all industries and that distribution processes are gradually gaining improvement.

Dr. Julius Klein, assistant secretary of commerce, told the assembled delegates that hardware production processes and executive direction are efficient, as shown by $5100 valuation of annual output per worker. There still remains the problem of selling and distributing, he said. In many instances, Mr. Klein pointed out, we know less about domestic than foreign distribution.

He further stated that the tendency toward mass mania was unfortunate. National distribution not always is profitable, he held and the mortality among retailers is serious. The manufacturer must concern himself with efficiency of outlets, he stated, since accelerated distribution has made the business structure more sensitive and that consequently distributors should follow trends more closely. They must search ruthlessly for basic factors governing distributive operations.

Careless market appraisals are the cause of much grief, Dr. Klein said, and business men must analyze cost of doing business more carefully. It also is desirable that unprofitable items and customers be eliminated. The purpose of selling is not to move goods but to build up profits, said Dr. Klein.

Committee Comments on Effect of "14 Points"

THE following constitutes the report which the trade practice conference committee presented before the metal branch of the National Hardware Association of the United States at Atlantic City. The report includes the 14 points proposed for eliminating many of the difficulties now existing in the marketing of steel sheets through warehouse distributors, as well as the committee's findings.

FIRST—That all mills divorce themselves forthwith from all subsidiary jobbing connections owned by them but masquerading under some other name.

Committee's Comment

The adoption of this provision by common agreement and consent of competitors, involves a restriction, by agreement, of the right and duty of free control of its own affairs upon the part of each of the mills and is therefore in violation of the Sherman Law, as defined in such well known decisions as U. S. v. Eastern States Retail Lumber Dealers association, U. S. v. Southern Hardware Jobbers association and U. S. v. National Wholesale Jewelers association.

The committee recognizes the fact that if this recommendation could be carried out that our position as jobbers would be strengthened. If not practicable, however, we recommend that where mills maintain warehouses for distribution that they merchandise their wares to the trade upon a jobbing basis.

SECOND—That all mills desist at once from the damnable practice of pool car shipments at the carload price.

Committee's Comment

If this recommendation could be carried out the distributor's position would be materially strengthened. If, however, it is not practical or legal to desist from this practice the Committee suggests that a fair differential over and above the established carload price be added on all commodities within said car.

THIRD—That all mill memberships in this organization be cancelled at once.

Committee's Comment

After consideration the committee does not agree with this suggestion, but believes the mills and distributors should first hold separate sessions to be followed by a joint session of both groups.

FOURTH—That who or what is a jobber be immediately defined and an authorized list of all who so qualify be immediately prepared for general distribution.

Committee's Comment

It is perfectly legal to draw up a definition as to what constitutes a jobber provided its definition is not used for the purpose of restraining trade. Your committee, therefore, defines a jobber in the sheet metal industry as follows—The industry hereby records its approval of the definition of a qualified distributor of sheet metals to be one whose principal business is selling to the sheet metal contractor, fabricator, retail distributor and other users, carries a well selected stock of sheet metals and kindred lines, buys in staple quantities, warehouses a reserve stock within a radius of economical distribution and convenience of service, resells through one or more salesmen outside of the city in which he is located in proper units as economically as possible, assumes the credit risk and such other obligations as are incident to the transportation, warehousing and distribution. It is not within the province of this committee or any group to draw a list or any lists of jobbers. It is absolutely illegal and was condemned in the Eastern States Lumber Dealers case.

FIFTH—That every concern named on said list be formed into an organization to supplant this one, said organization to be headed by the strongest executive head obtainable,

supplemented by a board of unquestioned ability.

Committee's Comment

Automatically limited by paragraph 4, as it is illegal to make such published lists of jobbers.

SIXTH—That a strong committee of jobbers be named from this new organization to confer from time to time with a similar committee from the mill organization on matters under dispute, or on any suggestions that may come to either committee from any source, recommendations from such joint committee to be final and binding on each organization.

Committee's Comment

That a strong committee of jobbers be named from this group to confer with similar committees named from the mill organization and from the American Steel and Heavy Hardware association on matters under dispute or on any suggestions that may come to either committee from any source, recommendations from such joint committees to be considered by each organization.

SEVENTH—That all such jobbers pledge themselves now to restrict their operations to their legitimate field. By this we mean the Boston jobber should not try to peddle his wares in Buffalo territory, nor the Buffalo jobber in Boston territory, etc.

Committee's Comment

It would be impractical as well as contrary to law.

EIGHTH—That a copyrighted brand be selected and adopted by this new association and all interested mills be licensed by said association to procure and sell said brand at a uniform market price.

Committee's Comment

It is the opinion of the committee that from a practical standpoint it would not be feasible to adopt a copyrighted brand. From a legal standpoint we do not think it practical as we have the following legal opinions—

"It would be possible to copyright a brand and license mills to produce this brand provided this was not done as a subterfuge to cover price fixing, allocation of territory or other practices which would be illegal without the use of the brand. This is also covered in the Southern Hardware Jobbers case in the paragraph of the decree which reads—

'Endeavoring, expressly or impliedly, or in any manner or by any means whatsoever, to prevail upon the defendant jobbers to sell any article of hardware or any other commodity to the retail dealers or other customers at uniform prices; or to in any way restrain competition among the defendant jobbers or other jobbers as to prices.'"

This point involves a clear violation of the Sherman Law as defined in U. S. v. Standard Sanitary Mfg. Co.

NINTH—That the jobbers organize and pledge themselves to never under any condition purchase any sheet from any source that does not bear their own regularly selected, adopted and copyrighted brand.

Committee's Comment

Answer to No. 8.

TENTH—That a committee of your own organization, either a special committee, or the one referred to in recommendation No. 6, be empowered to establish a resale price on products without deviation regardless of any special conditions that may be presented from time to time.

Committee's Comment

The committee recommends the establishing of a resale price by each individual mill on products covered by their own individual brands and that said resale prices be enforced without deviation.

ELEVENTH—That a spirit of cooperation be adopted by the members of each organization,—jobbers and manufacturers alike—and henceforth we work in the spirit of "all for one, one for all."

Committee's Comment

Heartily endorsed.

TWELFTH—That the members of the jobbers' association realize now that it is not helpful to either instruct their officers to carry on a ceaseless bombardment in an endeavor to tear down and destroy any forward movement that has been instituted by the mills and likewise the mills should recognize that they cannot have their cake and eat it, too.

Committee's Comment

We certainly would not favor any action by the officers of any organization we belong to that would be construed as detrimental to the industry. If the author of the fourteen points however had in mind the protests we as individuals have made against the withdrawal of the 2 per cent cash discount an action that has been injurious to the jobbing trade, then we are opposed to accepting any such injunction. We are just as much convinced now as we ever were that the withdrawal of the 2 per cent cash discount was an unjust move upon the part of the mills and that their action in adopting the ½ of 1 per cent discount is in distinct contra-distinction from the spirit expressed in the eleventh point. This committee would heartily endorse "any forward movement" that might be instituted by the mills for the betterment of the sheet metal industry.

THIRTEENTH—That we recognize the fact that a buyer who handles one carload in a given time is not entitled to the same consideration in price as the one who can handle ten times as much in the same length of time.

Committee's Comment

The committee is entirely in accord and in favor of. From a legal standpoint this is absolutely unobjectionable.

FOURTEENTH—That the jobber be assigned the task of handling this semioccasional carload business together with the less carload business from stock and that they made no effort to handle the tonnage business. On the other hand that the mills stay away from the one carload and the less carload buyer and devote themselves only to the tonnage buyer.

Committee's Comment

The committee recognizes the fact that the large tonnage buyer can be better served by direct mill contact.

Robert H. Lyon, chairman
George O. M. Johnston
F. J. McNeive
A. W. Howe
Karl Roth
Chairman F. O. Schoedinger, ex-officio
Secretary George A. Fernley, ex-officio

Business Is Sound

(*Concluded from Page* 1103)

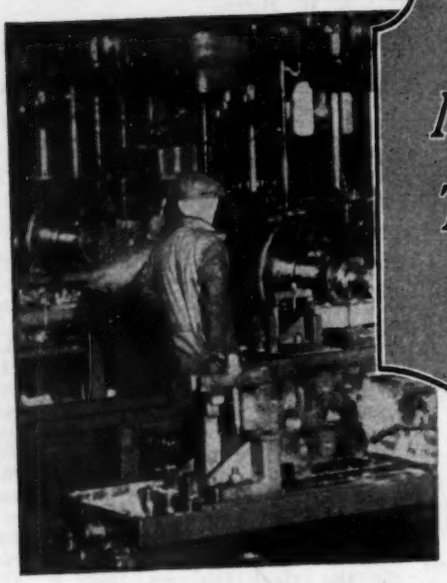
the cupidity of people is ever with us, and when somebody thinks they can take business that belongs to somebody else the natural result is that somebody else is going to take something that does not belong to them. That is the main trouble with our industry. You cannot sell seven tons of steel to a man that only wants to buy one, and if somebody sells that one there is no reason why the other six should go around and spoil the bargain or the sale.

This whole situation is in our hands, and I have not found anybody in the steel business that is any smarter than anybody else, and there are no new tricks in the game. With the standard that has been laid down by Mr. Schwab, assuming that he speaks for his own company, which I know that he does, I will guarantee, so far as the United States Steel Corp. is concerned, that there will be no complaint about their ethics in business. You know this word "ethics" has become a very popular word, and trade practices. I am not going to detain you any longer. There is a great deal of information which is more or less hermetically sealed inside of my anatomy, but I think I had better keep some of it there for the moment; but, if we fail at this juncture and violate the golden rule as between men and as between companies, then we can blame ourselves for anything that happens that will make the situation any different from what it is at the present time."

Welded Pipe Standards Are Outlined

"Design Standards for Oxwelded Steel and Wrought Iron Piping," is the title of a 67-page booklet recently published by the Linde Air Products Co., 30 East Forty-second street, New York, and available from any of the district offices of the company. The booklet is intended to enable the engineer and architect to design gas welded steel or wrought iron piping systems according to the best practice; it discusses such subjects as welded line joints, pipe flanges, welded tee and branch connections, fabricated and notched bends, swages or reducers, bull plugs and welded pipe anchors and headers. Complete detailed drawings of the various types of welds are included.

Sophocles, the Greek poet, who died in 406 B.C., spoke of the tempering of iron in water.



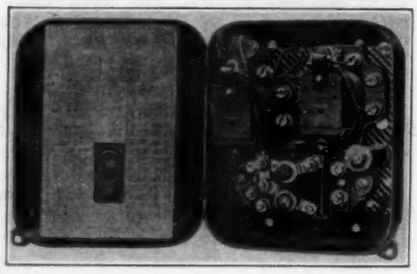
New Machine Tools and Shop Equipment

"Without tools man is nothing, with tools he is all."—Carlyle

Dual Drive Arc Welder a Flexible Unit

No. 235

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., is placing on the market a new dual-drive arc welding unit consisting of a standard 300-ampere single-operator welding generator, a 15-horsepower alternating-current induction motor and a six-cylinder gas engine, all mounted in tandem on a welded structural steel base. The motor operates on 220 volts but by reconnecting the external motor leads and changing the linestarter coil, it can be used on 440 volts. The generator can be driven by either the gasoline engine or the electric motor simply by engaging or disengaging a slip coupling or clutch. The unit is built either stationary or portable as desired. Advantages of the dual-drive arrangement are seen when the generator is continually being moved from one location to another, the electric or gasoline drives making a unit which is independent of local power limitations.



No. 236—Direct-current motor starter

Direct-Current Starters Completely Enclosed

No. 236

Cutler-Hammer Inc., 161 Twelfth street, Milwaukee, has announced a new automatic, across-the-line starter for direct-current motors up to 2 horsepower, 115 or 230 volts. Some of the new features incorporated in the design are small size, double line

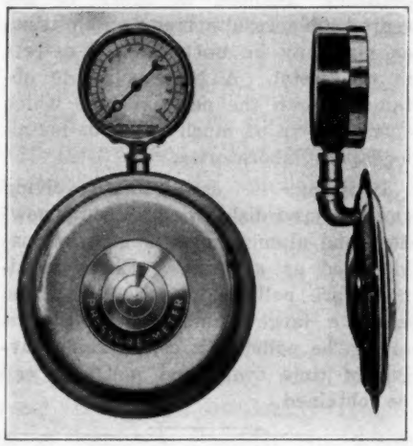
Iron Trade Review's Calender of New Equipment

Item	Comment	Builder	No.	Date Described	Page
Press	Open-back inclinable type; large bed area	Federal Press Co	215	Oct. 3	847
Coiler and reel	Tension reel with high-speed strip coiler	D. A. Clark Co	216	Oct. 3	847
Lathe	Electric polishing and buffing lathe	Hill-Curtis Co	217	Oct. 3	847
Milling machine	Spindle in head with vertical feed	Kent-Owens Machine Co.	218	Oct. 3	847
Saw blade	High-speed; adjustable inserted teeth	Hunter Saw & Machine Co	219	Oct. 3	851
Winch	Handpower type; rapid hoisting action	Stephens-Adamson Co	220	Oct. 3	851
Switch	Cam-operated limit switch; two-circuit type	General Electric Co.	221	Oct. 3	851
Gear generator	Roughs and finishes straight bevel gears	Gleason Works	222	Oct. 17	981
Universal machine	Performs seven separate machining operations	Simplex Mfg. Co.	223	Oct. 17	982
Combination machine	For burring, crimping, beading, etc. work on sheet metal	Niagara Machine & Tool Works	224	Oct. 17	982
Milling machine	Knee and column type; front and rear controls	Cincinnati Milling Machine Co	225	Oct. 17	983
Oil purifier	Portable centrifuge and filter press, mounted on truck	Westinghouse Electric & Mfg. Co.	226	Oct. 17	983
Hydraulic operator	Control device giving smooth upward thrust	General Electric Co	227	Oct. 17	983
Crawler unit	¾-yard capacity; gasoline driven	Thew Shovel Co	228	Oct. 17	984
Bearing	Self-sealed and self-lubricated ball bearing	New Departure Mfg. Co	229	Oct. 17	984
Milling machine	Bed-type; automatically-operated, hydraulic feeds	Oesterlein Machine Co.	230	Oct. 24	1044
Rougher	Four-spindle manufacturing type; for straight bevel gears	Gleason Works	231	Oct. 24	1045
Regulator	Two-stage pressure regulator for oxygen tanks	Oxweld Acetylene Co	232	Oct. 24	1045
Hobbing machine	Production-type for roughing and finishing spur gears	Barber-Colman Co.	233	Oct. 24	1046
Arc welder	300-ampere generator powered by 6-cylinder engine	General Electric Co.	234	Oct. 24	1046
Arc welder	Gasoline or electric drive; 300-ampere generator	Westinghouse Electric & Mfg. Co.	235	Oct. 31	1114
Starter	Across-the-line enclosed starter for direct-current motors	Cutler-Hammer Inc.	236	Oct. 31	1114
Meter	Indicates pressure between welding electrodes; hydraulic	Gibb Welding Machines Co	237	Oct. 31	1115
Hoist	Differential chain hoist; aluminum finish	Robbins & Myers Inc	238	Oct. 31	1115
Drill	High-speed type, sliding head; bench and pedestal models	Buffalo Forge Co.	239	Oct. 31	1115
Grinder	Portable pneumatic; rotary air motor drive	Chicago Pneumatic Tool Co	240	Oct. 31	1115
Lathes	Selective-type headstocks; 14 and 16-inch sizes	Boye & Emmes Machine Tool Co	241	Oct. 31	1116
Grinders	Electric; 7-inch flexible disk and 7-inch bench types	Van Dorn Electric Tool Co	242	Oct. 31	1116
Hacksaw	Also attachment to accommodate broken blades	Forsberg Mfg. Co	243	Oct. 31	1116
Drill	Rotary pneumatic; 1½-inch drilling capacity	Independent Pneumatic Drill Co	244	Oct. 31	1116

break, thermal overload protection, low voltage protection, silver contacts and completely enclosed structure, as shown in the accompanying illustration. Two magnetic contactors, one in each side of the line, connect the motor directly across the line on starting and provide double line break. The contactors are designed especially for direct-current service and have renewable contacts and a heavy stamped frame.

Relays Prevent Overloading

Thermal overload relays are of the fusible alloy type and can be adapted to any size motor by changing heater coils. When tripped by an overload the relays are reset by pushing a button in the cover. Each starter is furnished with a pushbutton master switch providing three-wire control. This master switch can be furnished mounted in the cover of the starter or can be arranged for mounting separately. The starters are made also without the thermal overload relays for applications where this sort of protection is unnecessary.



No. 237—Meter for recording pressure between welding electrodes

Meter Indicates Welding Electrode Pressure

No. 237

Gibb Welding Machines Co., Bay City, Mich., announces the introduction of a welding pressure meter that indicates, in pounds, the pressure existing at welding electrodes. The meter, shown in the accompanying illustration, operates by hydraulic pressure. The oil reservoir is formed by seam welding the edges of two stamped disks, forming a seam which is leakproof and pressure tight. To determine a certain welding pressure the oil-filled disk portion of the meter is placed between the electrodes of the welding machine and the pressure applied is registered, in pounds, by the indicating part of the meter. An outstanding advantage of the meter is the ease with which a welding machine can be set to the exact pressure desired, eliminating guess work. The meter is small and compact, the complete unit weighing approximately 2 pounds. It has a highly polished chromium-plated surface.

No. 238 — Differential chain hoist with all parts except chains finished in aluminum; chains are of a special heat treated and electrically welded steel

Develops Differential Chain Hoist

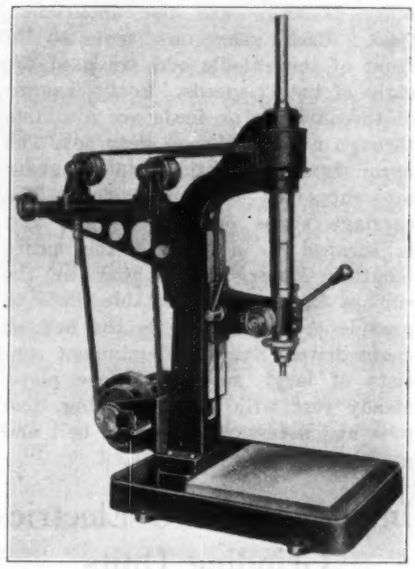
No. 238

Robbins & Myers Inc., Springfield, O., through its chain hoist division, has placed on the market a new chain hoist embodying three distinctive features of design. Tapered roller thrust bearings are used in the lower hook facilitating turning of the load in addition to reducing chain and upper sheave wheel wear caused by chain twisting. Sheaves are made of a new iron alloy which has high tensile strength and hardness. With the exception of the chains, all parts are finished in aluminum, providing a protection against damage from exposure. Chains are of a special steel, heat treated and electrically welded. The hoist, shown in the accompanying illustration, is made in five sizes with capacities ranging from ¼ to 2 tons.

High-Speed Drills Have Sliding Heads

No. 239

Buffalo Forge Co., Buffalo, is manufacturing a new 14-inch high-speed drill in both bench and pedestal types, featuring a design which permits a head slide of 7¼ inches. The drills are built for either motor or pulley drive. The single-spindle bench-type, shown in the accompanying illustration, will drill to the center of 14 inches, has a spindle travel of 3½ inches and a table measuring 19 by 22½ inches with a working surface of 14 by 14 inches. Diameter of the spindle is ⅝-inch and total height is 44 inches. A motor of either 1750 or 850 revolutions per minute speed is suitable, used in connection with 6-inch and 8-inch drive pulleys or 3-inch and 5-inch pulleys. Type of motor and drive pulley arrangement is dependent upon the speed desired and the nature of the work to be drilled. With the faster motor and the 6-inch and 8-inch drive pulleys four spindle speeds are possible, 9300, 6900, 4000 and 3000 revolutions per minute. Holes up to ⅛-inch in diameter in soft steel and ½-inch in diameter in brass can be drilled with this setup. The pedestal type drill has a slightly larger table and working surface; overall height is 81 inches.



No. 239—Bench-type high-speed drill with sliding head

Portable Grinder Driven by Air Motor

No. 240

Chicago Pneumatic Tool Co., 6 East Forty-fourth street, New York, announces a new type of portable pneumatic grinder employing the rotary drive principle. The motive power is furnished by the rotation of four vanes on a spindle in a casing having suitable openings for the admission and escape of compressed air. The grinder is governor-controlled, has a renewable air strainer, heavy-duty radial thrust ball bearings on the wheel end,

and renewable hardened rotor liner. The rotor is mounted on ball bearings. An automatic oiler is provided in the rotor housing with grease plugs in the handle and gear case ends. Two types of handles are available, a straight type and a pistol grip type. The size of the arbor on both models is ⅝-inch; speed 4250 revolutions per minute; each will accommodate a rubber or bonded elastic wheel 1 by 8 inches in size or a vitrified wheel, 1 by 6 inches. Standard equipment includes a 6 or 8-inch wheel guard, as specified.

Lathes Have Selective-Type Headstocks

No. 241

Boye & Emmes Machine Tool Co., Cincinnati, is announcing new 14 and 16-inch coneless lathes with 12 spindle speeds secured through 13 gears in the selective-type headstock with constant meshing of gears engaged by clutches. The spindle is mounted in phosphor-bronze bearings; other bearings are the antifriction type. Back gears are mounted in front of the spindle and are used for eight of the 12 speeds. Forty changes of thread leads or feeds are available through a quick change gear box. The apron is a box section and all gears are supported on both sides. The carriage slides on two V-ways and is scraped to a bearing the entire length. Motor is mounted in the cabinet leg on an adjustable plate to provide proper tension to the belt or chain drive. Standard equipment consists of large and small face plate, steady rest with 5-inch opening, tool post and necessary wrenches, belt and guards.

Introduces Two Electric Grinding Units

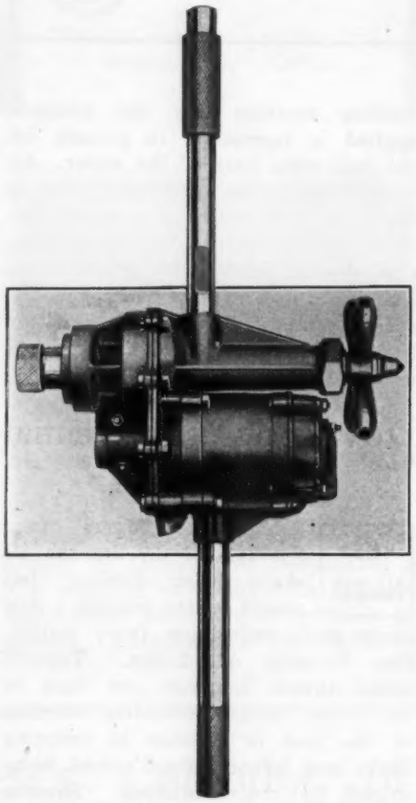
No. 242

Van Dorn Electric Tool Co., 3000 Woodhill road, Cleveland, announces the development of two new grinders, a 7-inch flexible disk grinder and a 7-inch bench grinder. The disk grinder is for use in smoothing welded and soldered joints and seams, cleaning dies, smoothing metal surfaces before painting and any other work requiring filing, sanding and emerying. A felt-backed abrasive disk is used. The grinder is provided with a removable pipe handle and right and left-hand bosses, making it possible to change the grinder quickly and easily for right or left hand operation. The bench grinder is suitable for sharpening all sorts of edge tools and light grinding work. Ball bearings enclosed in dustproof housings are used throughout. It is furnished complete with adjustable tool rests, two grinding wheels, guards, toggle switch in base, and cable; it is available for all voltages and currents.

Attachment Permits Use of Broken Blades

No. 243

Forsberg Mfg. Co., Bridgeport, Conn., is introducing a new utility hacksaw, adjustable to take any length blade, and also a new broken blade attachment for the saw which is said to eliminate broken blade loss and salvage all broken blade parts. The attachment is assembled in the frame of the saw at either end and the broken blade fits readily into the attachment. While the attachment has been designed specially for the new hacksaw it is adjustable to take any size blade or part blade and may be used with any size hacksaw frame.



No. 244—Rotary pneumatic drill

Builds Pneumatic Drill of Rotary Type

No. 244

Independent Pneumatic Tool Co., Chicago, has developed a new rotary pneumatic drill with a drilling capacity of 1½ inches and a reaming capacity of 1⅛ inches. Its governed free speed is 350 revolutions per minute. A one-man drill, it is said to operate smoothly and without vibration, carrying a 50-pound load at the same speed that it runs free, and a 100-pound load at a reduction in speed of 30 per cent. A governor is provided to control the throttle admitting the air. Because of its construction it gets in close on the side without removing the dead handle. A special nickel cast iron is used in cylinder construction to withstand wear caused by the rotor blades. Ball bearings are used throughout, including the spindle and gear. The drill, with its two long handles, is shown in the accompanying illustration.

Unit To Polish Metal Specimens Designed

An automatic machine for polishing metal specimens for microscopic examination of the crystals has been developed by the bureau of standards, Washington. The unit is designed primarily for use in the study of polishing methods in order to get reproducible results free from pitting, as pits may be mistaken for defects in the metal. A high polish is obtainable with the new machine which should prove of much value to metallographic laboratories.

Polishing is done on revolving cloth-covered disks with alundum powders and aluminum or magnesium oxide used as abrasives. Three specimens are polished on one disk thus, when a large number of specimens are to be polished a considerable saving of time over hand polishing can be obtained.

Standard Drill Sizes Are Proposed by Committee

An intensive study of the 138 drill sizes ranging from 0.0135 to 0.5000-inch, inclusive, and carried in stock by the various drill manufacturers and users, has been made by the American Standards association technical committee on the standardization of twist drill sizes. As the result of this study the committee has prepared two proposals covering diameter and length, which are considered satisfactory for use by industry. The proposals are now being circulated for review among users of these drill sizes to determine which are preferred. Copies of the proposals may be borrowed through the office of the American Standards association, 29 West Thirty-ninth street, New York.

Editorials

Stabilization—A Goal

NOT all that is proposed at the semiannual meetings of the American Iron and Steel institute eventuates, nor is it necessary that it should. In a large sense the institute is a clearing house, sifting out and interpreting for the iron and steel industry the vital business issues of the day. It is the imbuing of the industry with a course of action and not the promulgation of a program that is desirable.

Although, as Mr. Schwab explained, it was several weeks prior to the fall meeting of the institute at New York, Oct. 25, that he chose the topic—stabilization; nevertheless, after-events have cloaked the selection with almost prophetic insight. Coming after one of the worst breaks in the history of Wall Street, with more liquidation to come, and all industry apprehensive of the consequences, the topic was indeed timely.

Stabilization is highly desirable in all things. Provided current prices are remunerative to producers and fair to consumers, fluctuations might well be avoided. The producer would be assured a steady market, which always is kindly to production costs. The consumer would be able to hold inventories at a minimum, also be assured of stable costs, and would be freed from the pressure of his consumers for concessions.

Stabilization, however, is not a fact, and although the iron and steel markets of the past year have been unusually placid, the first signs of a letdown recently in demand for finished steel were reflected in some softness in price. Thus far producers have held the situation well, from their viewpoint. Whether the continued weakness in security values will have a psychological reaction in the commodity markets remains to be seen.

Meanwhile, the industry will have with it the perennial seeker of bargains, sensitive to the instinct to wrest an advantage over a competitor, but the tendency since the recovery from the war has been toward leveling off the peaks and filling in the valleys of price variations.

Taking a Chance on Iron Mines

RECENT mergers in the iron and steel industry affecting the control of Lake Superior iron ore properties have revived interest in the possibilities of low-grade ore mines. More attention has been given to reports indicating the rapid depletion of the best grades, since the steel industry has been consuming raw materials at an unprecedented rate. The natural assumption of some owners of iron ore lands is that now is the time to sell, and investors more or less acquainted with conditions in the industry are looking for bargains. Despite this interest, however, there have been few exchanges of low-grade ore properties, and it does not appear to be any easier now to sell them than at any time in the past ten years.

Mergers have included well-developed mines, producing merchantable ore, and aside from these there have been only two notable sales or exchanges of mines containing good grades of ore in the past year. The leading operators are always on the lookout for promising prospects; but the industry continues much overdeveloped, and they are having difficulty today in obtaining what their ore should be worth.

Investors unfamiliar with the iron ore industry take a serious chance in buying lands containing ore of low grades, the future of which is wholly dependent on beneficiating methods as yet not even developed. The men behind the Mesabi Iron Co. first devised a process for concentrating low-grade magnetic iron ore; then they went out and acquired a vast acreage on the eastern end of the Mesabi range containing the ore. They had capital and experience, but for a half dozen years their plant built at the cost of millions of dollars has remained idle, because of economic conditions in the industry. Unless others are as well or better fortified than these men, they had better wait until sure of their methods and certain of their markets.

Steel Prepares for Tomorrow

TO THE outsider the iron and steel industry has been sailing smooth waters the past year. Production of most products has been the highest in history, prices have generally been stable and remunerative, transportation of raw materials and finished products has been uninterrupted, government interference has been at a minimum, labor has been plentiful and wage rates steady.

A restful, satisfying picture indeed, but not

one to lull the far-sighted executives of the iron and steel industry into ease. Well do they realize that the serenity of the present period has by no means stilled the competitive spirit which will become accentuated when market conditions grow less easy. Wisely appraising today's tranquility as partly the result of yesterday's planning, they are looking into tomorrow. Many of the undercurrents of the industry can be translated into terms of preparation for a more competitive era.

An important independent steelmaker has been advantageously situated with respect to the export and Pacific coast situation by reason of plants close to or upon the eastern seaboard. Now a large interest, with little production east of Pittsburgh, is acquiring capacity on the Pacific coast. The much-discussed merger of middle west independents, now taking initial form in the grouping of alloy steel units, will whip into solidarity many dissociated units and improve their position for market offensives.

The combination of two strip producers and a Great Lakes ore and vessel interest should prove mutually strengthening. There have been some shifts in Lake Superior iron ore properties, all looking to increased reserves. South American ore properties are receiving greater attention from seaboard consumers. A middle west barmaker, lacking adequate consuming connections, is taking over a large cold bar finisher. Self defense in turn may compel the barmaker losing this account to become a more active cold finisher.

These are only a few of the stirrings beneath an apparent placid surface, which reveal that the production records and improved positions of the past few months are only spurs to further achievement. So long as the industry is immune to the lethargy which an exceptionally good year might induce, it is safe.

Ironmaking Industry Should Benefit

NOT since the days of Sir Lowthian Bell has such important blast furnace research work been made as that recently completed by the staff at the Minneapolis experiment station of the bureau of mines. Results of the investigation of the influence of different methods of charging and of the treatment of raw materials upon the size distribution of the solid particles in the blast furnace have been disclosed.

Attention is directed to the desirability of larger stock lines to obtain a reduction in the gas velocity through the raw materials in this section of the stack. A larger annular space from the periphery of the bell to the inwall also is stressed. This latter arrangement affords a more uniform percentage of voids in the plane from the center of the furnace to the brickwork and reduces the variation in the velocity of the gas near the center of the furnace and that near the lining. Steeper bells, larger bell clearance and drop and a quicker movement of bells give better charging characteristics which in turn, effect greater uniformity in the travel of the gas and lower flue dust production.

Undoubtedly a higher operating efficiency can be obtained by blast furnacemen by enlargeing top diameters, by installing smaller bells and by adopting other proposals of the bureau. Blast furnace operators should study the information and data uncovered by the investigation to the end that the ironmaking industry may benefit. Moreover, the important work executed by the investigators should lend itself toward the establishment of a closer relationship between government engineers and operators and builders of blast furnaces. Such study and co-operation would be far-reaching not only in its effect on operating efficiency but to the iron and steel industry in general.

Railroads Dominate Transportation

RAILROADS while broadening their operations, unquestionably have learned how to obtain vastly more service from their existing facilities. In venturing into truck, bus and airplane extensions the roads have been seeking to maintain their position as the backbone of the transportation industry. Despite the probable changes in transportation machinery of the future, many views are that the railroads will more and more predominate in the movement of heavy commodities and the transport of passengers over long distances, even considering the airplane a competitor in long distance passenger service.

Aggregate mileage of motor truck and bus routes under railroad supervision has been trebled this year. In thus extending their services, the roads are attacking the transportation problem from a comparatively new angle. The motor truck lines may be expected to obtain a large part of the light package freight tonnage; the less-than-carload business totals less than 5 per cent of freight traffic on the railroads, at the same time requiring a fifth of aggregate car capacity.

It is important to note that while railroad activities are being broadened, the carriers are making service to shippers paramount, and to that end will maintain the best in equipment.

IRON TRADE REVIEW

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E. L. SHANER, Editor. — *J. D. PEASE, Advertising Director.* — *F. F. LIGHT, Circulation Manager.*

Making Electrically Welded Steel Tubing in New Detroit Plant. Page 1091.

Confidence Sustained at Steel Meeting

MORE than twelve pages in this issue of IRON TRADE REVIEW *are devoted to the fall meeting of the American Iron and Steel institute, with reports from staff editors on the business viewpoint of the meeting, and liberal abstracts of the papers that were presented. Coming the day after the first disconcerting "shakeout" in the stock market, the interchange of the best thought in the iron and steel industry tended to sustain confidence. The 2000 representatives of the industry who attended the meeting are imbued with a hopeful spirit. War-time associations were recalled when the Hon. Winston Churchill, chief of munitions production in the Lloyd-George cabinet, was a speaker at the banquet, while nearby him sat Bernard Baruch and J. Leonard Replogle, who did so much to facilitate output in the United States.*

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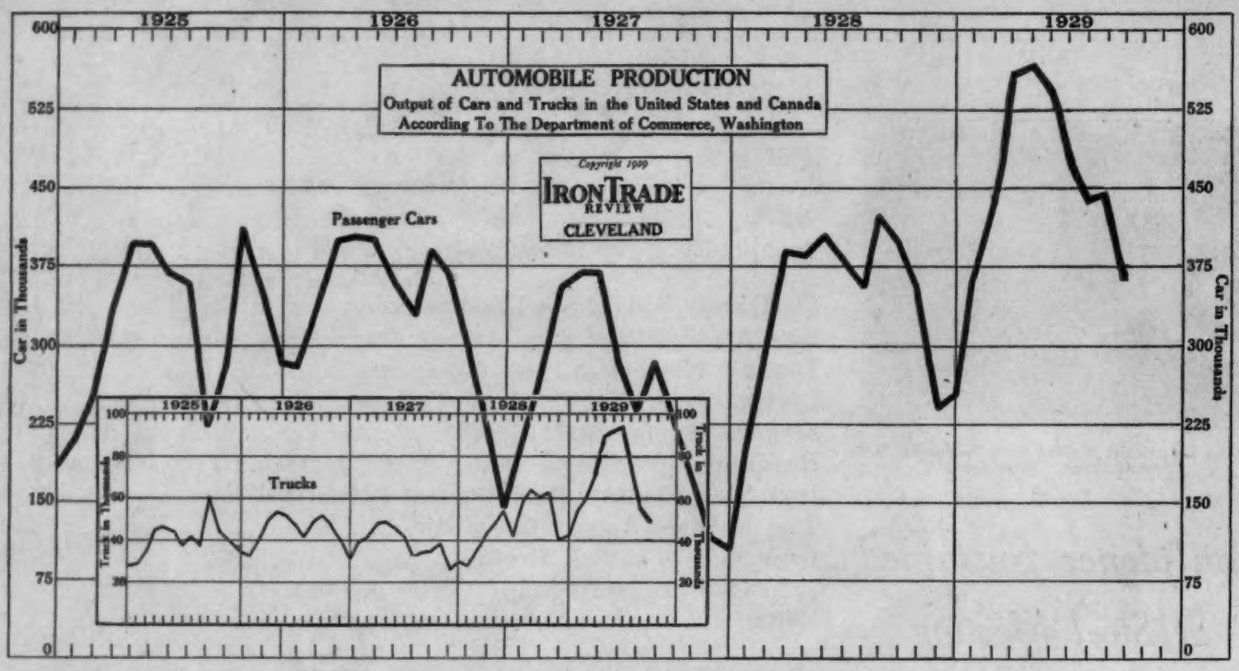
The Business Trend



Stock Slump Makes History

By JOHN W. HILL, Financial Editor

FINANCIAL history has been made lately with the gigantic crash of stock market values, the most sweeping and extensive in the annals of organized speculation. The full effects of this event upon sentiment generally and upon business and financial conditions will become apparent gradually, but it is possible to derive some conclusions from what has happened.

IN THE first place, the drastic marking down of share values has served as a violent purgative of a congested credit situation. For months the stock market soared in the face of high call loan rates. Brokers' loans mounted to dizzy heights and throughout the world complaints were set up that Wall Street was draining the credit sources of more countries than one.

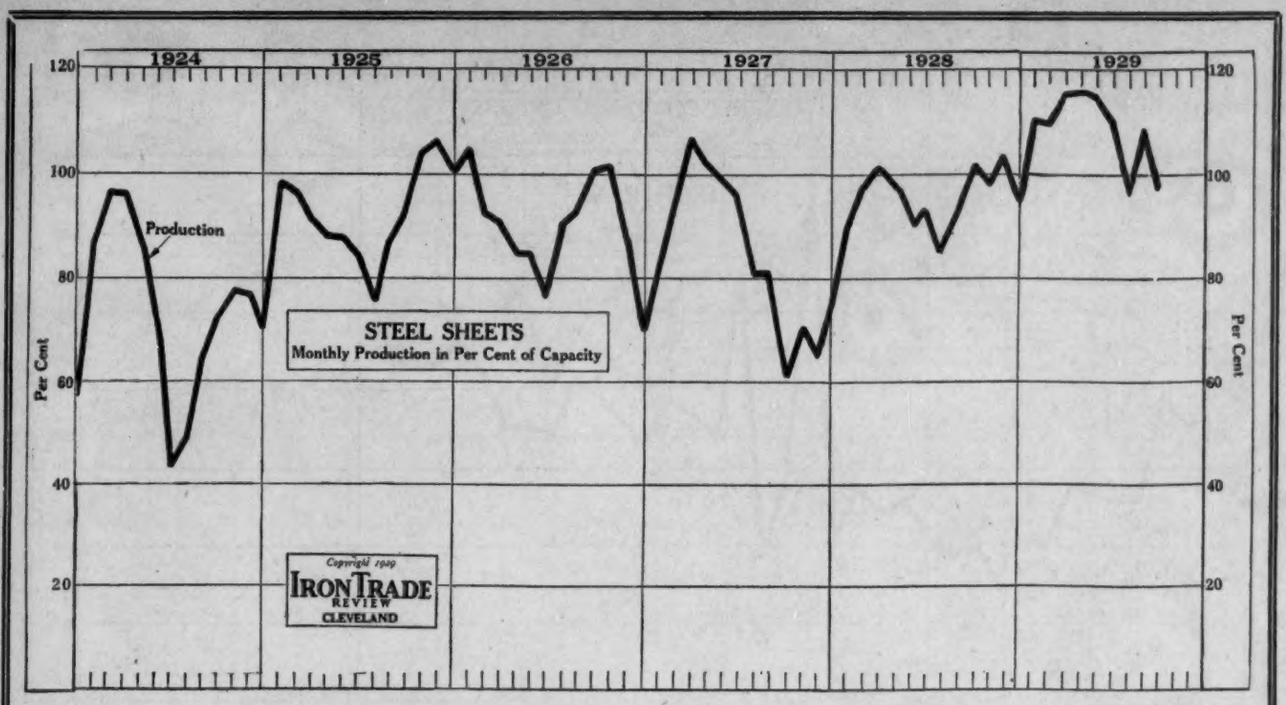
WITH the remedying of the credit situation has come improvement in the long neglected bond market. This presages a stimulus to business through encouraging a revival of building and of railroad purchases. A better bond market also will pave the way for additional foreign loans, giving foreigners greater purchasing power for American goods. At the same time the carrying of the fashion for common stocks to absurd lengths has been halted.

BUSINESS during the current year has enjoyed exceptional activity and the full year's results may be record-breaking in many lines. The stock market far overdiscounted the extent of this prosperity and failed to take into account the probability of some slowing down in industry. Realization that this was happening and growing concern over brokers' loans combined to institute the onslaught of liquidation which has taken place.

ACTUALLY some lines of industry are going through a mild readjustment period. The automobile situation is giving the most concern, because of its reaction on the iron and steel and other supplier lines. During the first nine months of the year manufacturers produced about 400,000 more cars than were sold. Sharp curtailment over the remainder of 1929 is probable, with a healthier result for dealers' stocks of cars.

MEANWHILE, there are no signs of an impending serious slump in trade. The break in the stock market undoubtedly will react unfavorably upon some classes of retail sales, but its broader results through a clarification of credit and a return to realities should be favorable in the long run.

The Business Trend

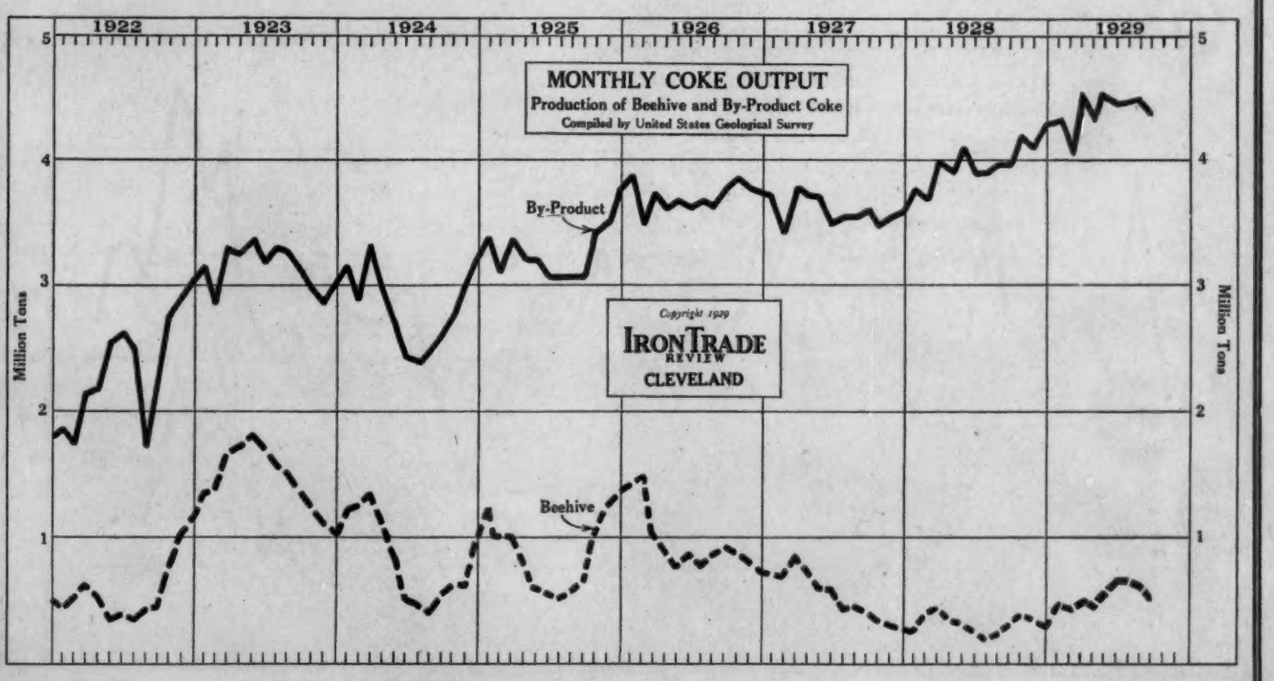


Steel Sheets

MODERATE recession has been taking place in the sheet industry. Production by independent producers for September, as reported by the National Association of Flat Rolled Steel Manufacturers, was at 97.7 per cent of capacity compared with 109.7 per cent of capacity in August. Sales showed some increase relative to capacity, standing at 88.7 per cent compared with 88.4 per cent in September. Unfilled orders declined to 168.9 per cent, compared with 170.7 per cent. Total sales in September were 274,568 tons.

Coke Production

BOTH by-product and beehive coke production continue to hold above last year's levels. During September production of by-product coke was 4,413,011 tons, a slight decline from the total of 4,642,785 tons in August, but a large increase over that of 3,958,682 tons for September, 1928. The daily average output for the month was 147,100 tons, compared with 131,956 tons one year before. Beehive production in September was 504,300 tons against 561,800 tons in August and 312,500 tons one year ago.



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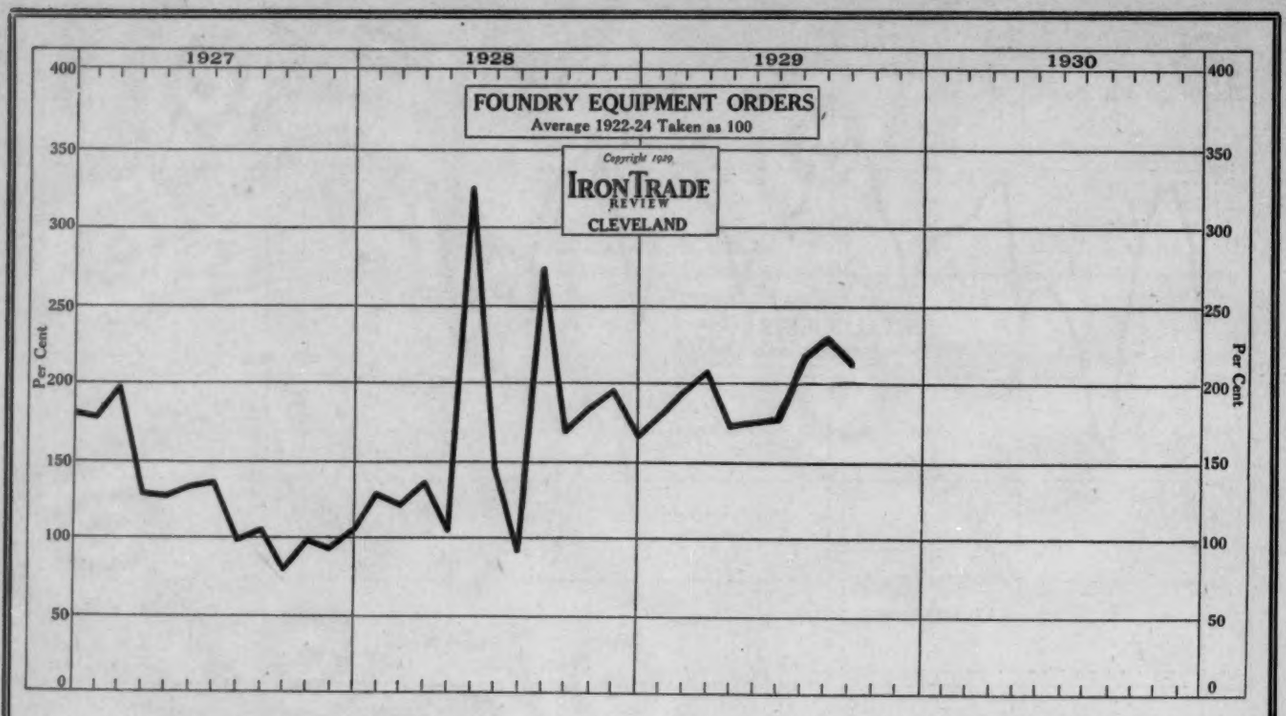
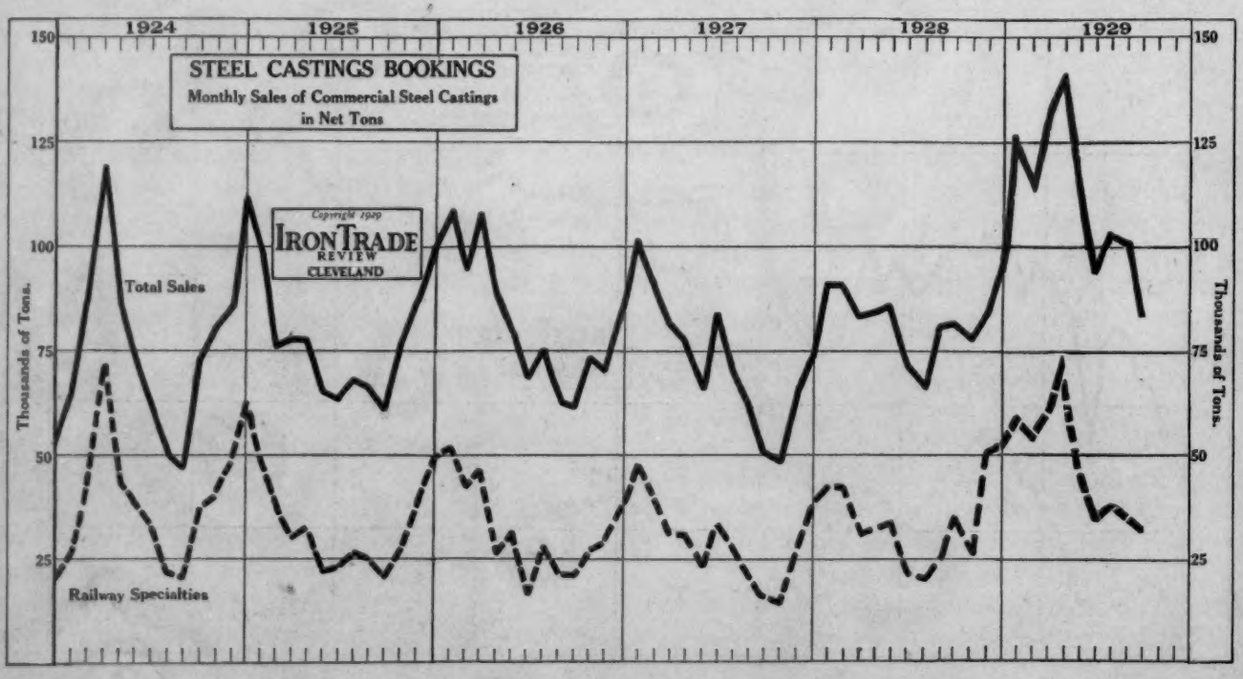


Foundry Equipment

SEPTEMBER brought a decline in orders for new foundry equipment from the high record of the preceding month. However, the index was the highest for any September in three years, according to the compilation of the Foundry Equipment Manufacturers association. The index stood at 216 for September, compared with 229.5 for August and 170 for September, 1928. In September, 1927, the index was 80.4. The August figure was the highest of any time in 1929.

Steel Castings

NEW orders for commercial steel castings in September were at the lowest point of any time in 1929. However, they slightly exceeded the total for September, 1928. Bookings for the month amounted to 83,200 tons, compared with 100,500 tons in August, and 82,762 tons in September, 1928. Total orders for the first nine months of the year of 1,010,077 tons compare with 740,762 tons for the like period of 1928. Bookings of railway specialties for the month amounted to 32,400 tons against 36,500 tons in August.



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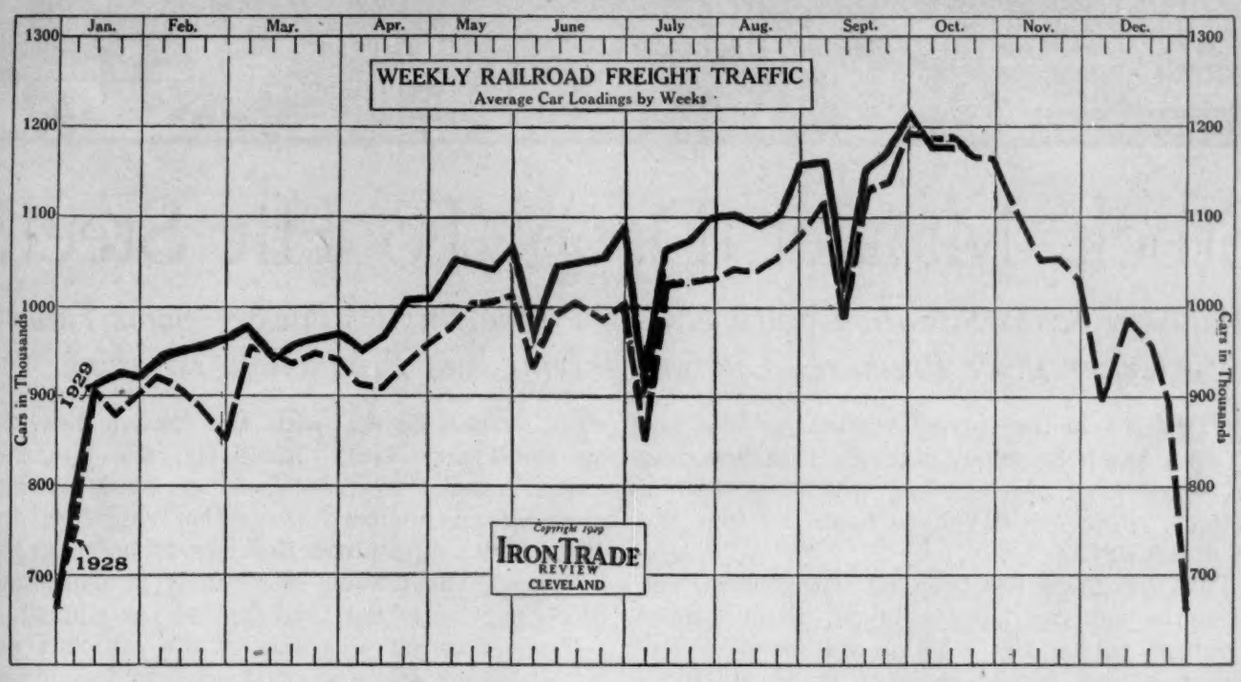
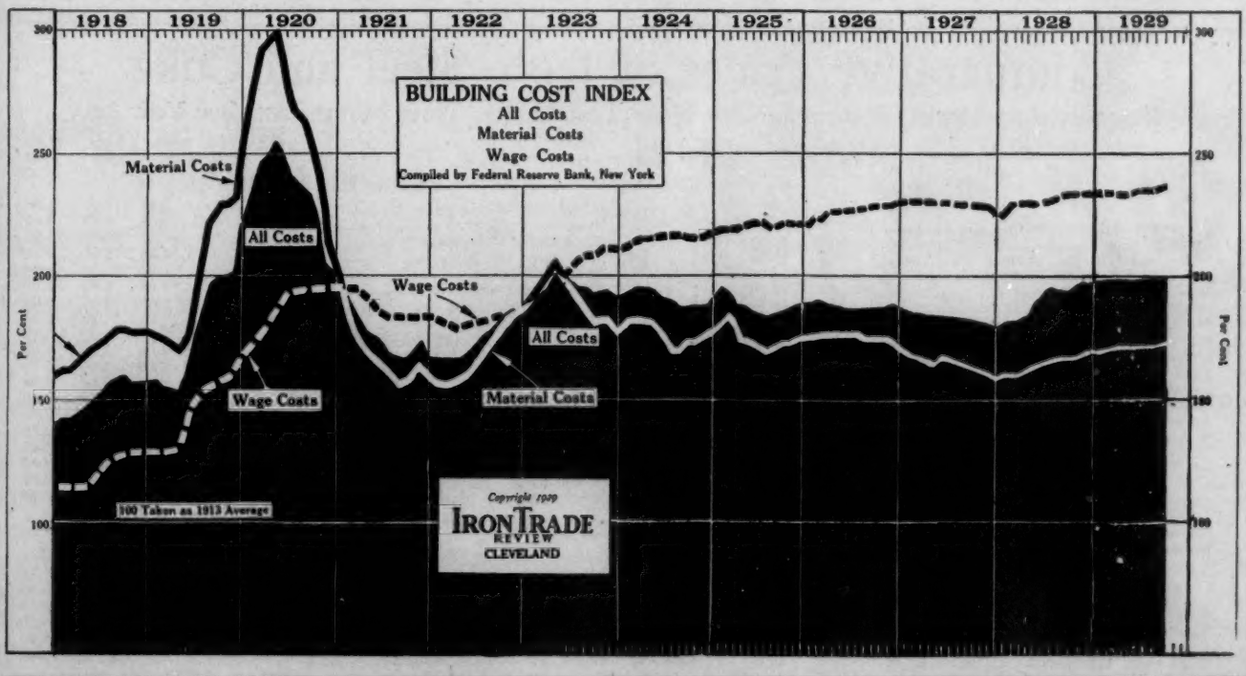


Weekly Freight Traffic

FOR the week ended Oct. 12 the number of freight cars loaded was 11,733 fewer than in the corresponding week of 1928. Total loadings for the period were 1,179,008 cars, compared with 1,179,047 cars in the first week of October. For the corresponding week of 1928 the loadings amounted to 1,190,741 cars. In the second week of October, 1928, loadings reached the peak for the year and declined rapidly to December. Total loadings for the year to date are 42,271,407 cars, compared with 39,622,335 one year ago.

Building Costs

THE last half of this year is witnessing an upturn in costs of building construction. The outstanding feature in the higher level has been the rise of wages. The index of building costs compiled by the federal reserve bank of New York showed an increase in the wage index of September to 242, compared with 238 in August and 233 in September, 1928. The index of total costs was 198, compared with 195 in August and 191 one year ago. Material prices stand at an index of 168.



Stock Market Drop To Hit Steel?

Industry Scans Situation, with Eye on Public Buying Power—Some Lines Under Price Pressure—Current Buying and Production Tapering

INTEREST in the current market for iron and steel has been subordinate the past few days to appraisal of the effect which the debacle in security values may have upon the iron and steel industry.

Thus far there has been no repercussion, and since the industry lacks a broad, direct contact with the public, any reaction will be of a secondary nature, but there is no doubt steel will be sensitive to any general contraction in buying power.

Steel Stock Loss Billion and Half

As to its own fortunes, the common stocks of 11 leading producers of steel, dealt in on the New York exchange and representing 75 per cent of the country's ingot capacity, to the close of business Oct. 29 had declined $1,133,587,416 from the year's high. On this basis, the stock valuation of the industry has shrunk a billion and a half dollars.

Of the major consumers of steel, the automotive industry appears most exposed to the shock of stock market losses, with the burden heaviest on the luxury cars. Relatively, the situation might redound to the benefit of Ford, already planning an intensive production campaign for 1930. With auto production now at bedrock, the immediate effect would more likely be deferment of resumption rather than further curtailment.

Track material programs of the railroads are so largely replacement that exterior conditions must pursue a devious route before affecting maintenance. A large proportion of 1930 material already has been ordered. Carbuilders have sufficient business on their books to carry them through the year, though action on pending inquiry may be retarded.

Less Money Available for Luxuries

Farm implement manufacturers appear least likely to be affected. Building is entering what is normally an off season, but fabricators in the East have rarely been so well booked. Shipbuilders are embarked upon the best programs since the war. Pipe line projects which have been de-

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Oct. 30, 1929	Sept. 1929	July 1929	Oct. 1928
PIG IRON				
Bessemer, del. Pittsburgh	$20.76	20.76	20.76	19.11
Basic, valley	18.50	18.50	18.50	16.85
Basic, eastern, del. eastern Pa.	19.75	19.85	19.85	19.75
No. 2 foundry, del. Pittsburgh	19.76	19.76	19.76	18.76
No. 2 foundry, Chciago	20.00	18.90	20.01	22.26
*Southern No. 2, Birmingham	14.00	14.00	14.40	16.25
**No. 2X, Virginia furnace	18.25	20.00	20.00	20.50
**No. 2X, Eastern del. Philadelphia	22.26	22.26	22.26	21.26
Malleable, valley	19.00	19.00	19.00	17.35
Malleable, Chicago	20.00	20.00	20.00	18.80
Lake Superior, charcoal, del. Chicago	27.04	27.04	27.04	27.04
†Gray forge, del. Pittsburgh	19.13	19.13	19.13	18.26
Ferromanganese, del. Pittsburgh	109.79	109.79	109.79	109.79

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.
†Now based on Pitts. dist. fur. price; formerly on Valley base.

COKE				
Connellsville furnace, ovens	2.65	2.65	2.75	2.80
Connellsville, foundry, ovens	3.75	3.75	3.75	3.75
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	35.00	35.00	35.00	33.00
Sheet bars, open-hearth, Pittsburgh	35.00	35.00	35.00	33.00
Billets, open-hearth, Pittsburgh	35.00	35.00	35.00	32.75
Wire rods, Pittsburgh	40.00	42.00	42.00	42.00

	Oct. 30, 1929	Sept. 1929	July 1929	Oct. 1928
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.90	1.95	1.95	1.95
Steel bars, Chicago	2.00	2.05	2.05	2.00
Steel bars, Philadelphia	2.22	2.27	2.27	2.27
Iron bars, Chicago	2.00	2.05	2.05	2.00
Shapes, Pittsburgh	1.90	1.95	1.95	1.95
Shapes, Philadelphia	2.01	2.06	2.06	2.08
Shapes, Chicago	2.00	2.05	2.05	2.00
Tank plates, Pittsburgh	1.95	1.95	1.95	1.95
Tank plates, Philadelphia	2.15	2.15	2.15	2.15
Tank plates, Chicago	2.00	2.05	2.05	2.00
Sheets, black, No. 24, Pittsburgh	2.75	2.85	2.85	2.70
*Sheets, blue anl., No. 13, Pittsburgh	2.35	2.35	2.35	2.00
Sheets, gal., No. 24, Pittsburgh	3.50	3.50	3.60	3.50
Sheets, black, No. 24, Chicago	3.00	3.10	3.10	2.90
*Sheets, blue anl., No. 13, Chicago	2.50	2.50	2.35	2.15
Sheets, galvanized, No. 24, Chicago	3.65	3.75	3.85	3.65
Plain wire, Pittsburgh	2.40	2.45	2.50	2.40
Wire nails, Pittsburgh	2.40	2.50	2.65	2.55
Tin plate, per base box, Pittsburgh	5.35	5.35	5.35	5.25

*Comparisons for July, 1929 and October, 1928, are with old blue annealed base, No. 10.

SCRAP				
Heavy melting steel, Pittsburgh	17.00	18.45	18.45	17.35
Heavy melting steel, eastern Pa.	15.50	16.38	16.50	16.00
Heavy melting steel, Chicago	14.25	15.05	14.75	13.75
No. 1 wrought, eastern Pa.	16.25	16.13	16.25	15.50
No. 1 wrought, Chicago	14.50	15.70	14.85	13.50
Rails for rolling, Chicago	16.00	17.60	17.50	16.40

Current Prices for Rolled Steel Products

PRICES IN CENTS PER POUND

STEEL PLATES

Pittsburgh, base	1.90c to 1.95c
Philadelphia, del.	2.15c
New York, del.	2.225c to 2.325c
Boston, del.	2.265c to 2.415c
Chicago, base	2.00c to 2.05c
Cleveland, delivered	2.14c
Lackawanna, N. Y., base	2.05c to 2.15c
Birmingham, base	2.10c
Coatesville, Pa., base	2.00c to 2.10c
Pacific Coast, c.i.f.	2.35c
St. Louis, del.	2.27c
Detroit, del.	2.19c to 2.24c

STRUCTURAL SHAPES

Pittsburgh, base	1.90c to 1.95c
Philadelphia, del.	1.96c to 2.06c
New York, del.	2.145c to 2.195c
Boston, del.	2.265c to 2.415c
Chicago, base	2.00c to 2.05c
Cleveland, delivered	2.09c to 2.14c
Lackawanna, N. Y.	2.05c to 2.15c
Birmingham, base	2.10c
Bethlehem, Pa., base	2.00c to 2.10c
Pacific Coast, c.i.f.	2.35c
Detroit, del.	2.19c

BARS

SOFT STEEL

Pittsburgh, base	1.90c to 1.95c
Chicago, base	2.00c to 2.05c
Birmingham, base	2.10c
Lackawanna, N. Y., base	2.00c to 2.05c
Pacific Coast, c.i.f.	2.35c
Cleveland, base, local mills	1.90c
Cleveland, del., outside mills	1.95c
Philadelphia, del.	2.22c
New York, delivered	2.24c to 2.29c
Boston, delivered	2.265c to 2.415c
Detroit, del.	2.07c to 2.19c
Pittsburgh, cold finishing	2.05c
Pittsburgh, forging quality	2.15c

RAIL STEEL

Chicago Heights	1.95c
Eastern mills	1.85c to 1.95c

IRON

Chicago, base	2.05c to 2.10c
New York, delivered	2.19c to 2.24c
Philadelphia, delivered	2.17c to 2.22c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pittsburgh, billet, cut lengths	2.30c
Stock lengths from mill	2.05c
Chicago, billet	2.15c to 2.35c
Chicago, rail steel	1.95c to 2.00c
Chicago, rail steel, road and bridge work	1.95c to 2.05c
Philadelphia, cut lengths	2.52c to 2.62c

STAINLESS STEEL OR IRON

Base, Pittsburgh

18 per cent nickel, 8 per cent chrome

Sheets	35.00c
Plates	31.00c
Bars	28.00c

SHEETS

SHEET MILL BLACK, No. 24

Pittsburgh, base	2.75c
Philadelphia, delivered	3.17c
Gary, Indiana Harbor	2.95c to 3.05c
Chicago, delivered	3.00c to 3.10c
Birmingham, base	3.00c
St. Louis, del.	3.27c

TIN MILL BLACK, No. 28

Pittsburgh, base	2.90c to 3.00c
Gary, base	3.00c to 3.10c

GALVANIZED, NO. 24

Pittsburgh, base	3.50c
Philadelphia, delivered	3.72c to 3.82c
Gary, Indiana Harbor	3.60c to 3.70c
Chicago, delivered	3.65c to 3.75c
Birmingham, base	3.70c
St. Louis, del.	3.92c

BLUE ANNEALED

Sheets, No. 13

Pittsburgh, base	2.35c
Chicago, district mills	2.45c
Chicago, delivered	2.50c
St. Louis, delivered	2.67c
Philadelphia, delivered	2.67c
Birmingham	2.50c

Plates, No. 9 and 10

Pittsburgh, base	2.10c to 2.20c
Chicago district mills	2.30c
Chicago, delivered	2.35c
Philadelphia, delivered	2.52c
St. Louis, delivered	2.67c
Birmingham	2.35c

AUTOMOBILE, NO. 20

Pittsburgh, base	4.00c
Detroit, delivered	4.29c

FURNITURE

Pittsburgh	4.10c to 4.20c

(*Turn to the following page*)

layed in financing may be favored. It seems probable that demand for steel for radio and domestic equipment production will suffer.

Iron and steel producers naturally are uneasy over the psychological effect of the shakeout and the certain consequent shrinkage in buying power. The disturbance, however, comes at a season when a reaction already has set in from nine record months, and the last quarter never is brilliant in production or earnings.

Some benefit, in fact, may be derived from the termination of an unhealthy speculative condition and the return of credit to normal channels. With security values lower, the proposed merger of independent steel producers may be hastened, as smaller sums are now involved. It may be that consumer pressure on prices will be intensified, but the tonnage to give force to these demands is lacking.

Auto Inertia Is a Drag

Both specifying and production of iron and steel continue to decline moderately, faithful to the trend of recent weeks. As a whole, October shipments were slightly short of those of September and last October. Pig iron is exceptionally dull, being between two buying seasons. Finished steel demand is seasonally good except for the automotive industry, and those makers dependent upon the industry are the least active in a year. Plates are the most active steel product, benefiting both from freight car and ship building. Two Dollar Line steamers awarded to the Newport News Shipbuilding & Dry Dock Co. require 17,500 tons of plates, 7200 tons of shapes and 1500 tons of bars. For 100 locomotives distributed by the Pennsylvania railroad 4000 tons of plates will be needed.

Building Active in Large Cities

For New York subway construction 13,200 tons of shapes has been bought and 20,000 tons more is pending. A 15,000-ton bank job is up at Chicago. Bars lag, chiefly on account of automotive industry inertia. At Chicago bars, plates and shapes have slipped off $1 per ton.

Sheet prices appear soft at Detroit, especially black and autobody where extras are involved. Wide hot strip is weak at Chicago and Detroit. Eastern public utilities are attempting to profit by current easy prices and are offering 1930 tonnage. Pig iron and coke prices are generally unchanged, with Virginia iron off $1.75. Most scrap prices continue to tumble. Semifinished steel prices are under pressure.

Steel corporation subsidiaries are operating at 82 per cent this week, a decline of 1 point. Chicago district mills are at 80 per cent, Pittsburgh 80 to 85, and Youngstown below 70 per cent.

Composite Market Average

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (October 30, 1929)	36.09
Last week (October 23, 1929)	36.16
One month ago (September, 1929)	36.50
Three months ago (July, 1929)	36.71
One year ago (October, 1928)	35.53
Ten years ago (October, 1919)	48.76
Fifteen years ago (October, 1914)	22.84

Due to a revision in the market on Virginia pig iron, the IRON TRADE REVIEW composite of 14 leading iron and steel products declined 7 cents this week, to $36.09. The average for October now stands at $36.23.

Current Rolled Steel Prices

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED

Tubular Products Quoted On Last Editorial Page—See Preceding Page For Other Products

HOOPS, BANDS, STRIPS

Hot strip, to 6-in., Pitts.	2.00c
Hot strip 6 1/4 to 24-in., Pitts	1.90c
Do, delivered Detroit	2.09c to 2.19c
Hot strip, bands 6 in. and under, Chicago	2.10c
Do, 6 1/4 to 23 1/4	2.00c
Cooperage stock, Pittsburgh	2.20c
Do, Chicago	2.30c
Cold rolled strip, hard coils, 16 inches and under by 0.100-inch and heavier, base Pitts., Cleve. (3 ton and over)	2.75c
Worcester, Mass. (3 tons and over)	2.90c to 3.00c

ALLOY STEEL

Hot Rolled

F.o.b. Mills

Alloy Quality Bar Base is 2.65c

S.A.E. Series Number	Alloy differential	Net 100 lb.bars
2000	0.25	$2.90
2100	0.55	3.20
2300	1.50	4.15
2500	2.25	4.90
3100	0.55	3.20
3200	1.35	4.00
3300	3.80	6.45
3400	3.20	5.85
4100 0.15-0.25 Mo.	0.50	3.15
4100 0.25-0.40 Mo.	0.70	3.35
4600 0.20-0.30 Mo. 1.25-1.75 Ni.	1.05	3.70
5100 0.60-0.90 Cr.	0.35	3.00
5100 0.80-1.10 Cr.	0.45	3.10
5100 Chrome Spring	0.20	2.85
6100 Bars	1.20	3.85
6100 Spring Steel	0.95	3.60
Chrome Nickel Vanadium	1.50	4.15
Carbon Vanadium	0.95	3.60
9250 (flats)	0.25	2.90
9250 (rounds, squares)	0.50	3.15

Hot rolled alloy billets 4 x 4-inch and over take same price per gross ton as same specification alloys bars per net ton. Sizes under 4 x 4 to 2½ in. x 2½ in. inclusive sold on bar basis plus steel bar card extras for size. Sizes under 2½ in. x 2½ in. take bar price on net ton basis.

COLD FINISHED STEEL

Bars, drawn or rolled, Pitts., Chi., Buffalo, and Cleve. c.l.	2.30c
Do, delivered, Detroit	2.535c
Shafting (turned, polished) Pittsburgh, Buffalo	2.30c
Shafting (turned, ground) mill (Depending on size, 1 3/16 to 7-inch)	2.65c to 3.10c

WIRE PRODUCTS

F.o.b. Pittsburgh, Cleveland, Ironton base

(Per Pound)

	Trade	Large Jobbers
Bright plain wire, 6 to 9 gage		2.40c
Annealed wire	2.65c	2.55c
Galvanized wire	3.10c	3.00c
Barbed wire, galvanized	3.15c	3.05c
(Per 100-pound keg)		
Wire nails	$2.50	$2.40
Galvanized nails	4.50	4.40
Polished staples	2.95	2.85
Galvanized staples	3.20	3.10
Cement coated nails	2.50	2.40
Wire, delivered Detroit		2.57c
Nails, delivered Detroit	$2.57 to	2.72

Joliet, DeKalb and Waukegan, Ill., Anderson, Ind., and Chicago prices $1 per ton over Pittsburgh-Cleveland-Ironton base on products made there; Duluth $2 higher; Worcester, Mass., Fairfield, Ala., $3 higher.

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

Anderson, Ind., $1 higher. Chicago $2 higher, Duluth, Birmingham $3 higher.

CUT NAILS, CHAIN, PILING

Cut nails, c.l., f.o.b. mills	2.70c to 2.75c
Cut nails, l.c.l. f.o.b. mills	2.80c to 2.85c
Sheet piling, base, Pittsburgh	2.25c

Chain proof BB and BBB, Pitts.

3/16-in. to ½-in.	33 1/3 and 5 off
9/16-in. to 1½-in.	33 1/3 off

CAST IRON WATER PIPE

Class B Pipe—Per Net Ton

Six-inch and over, Birming'm	$37.00 to 38.00
Four-inch, Birmingham	41.00 to 42.00
Four-inch, Chicago	49.20 to 50.20
Six-inch to 24-inch, Chicago	45.20 to 46.20
Six-inch and over, New York	37.50 to 39.50
Four-inch, New York	40.00 to 41.00
Standard fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $4 higher than Class B.

TIN PLATE; TERNE PLATE

Prices per 100-pound box Pittsburgh

*Tin plate, coke base	$5.35

Gary, Ind., base 10 cents higher.

Long ternes, primes, No. 24— 4.00c to 4.10c

*Price subject to quantity differentials.

WASHERS

Wrought, c.l., Pitts. dist.	$6.50 to 6.75 off
Wrought, c.l., Chicago dist.	$6.702 to 26.90 off
Lock: to dealers	85-5 off
Lock: to consumers	85 off

RAILS, TRACK MATERIAL

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$24.00 to 29.00
Light rails, 25 to 45, mills	$36.00
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.80c
Spikes, small railroad, 7/16-inch and smaller, Pitts.	2.80c
Spikes, boat and barge, Pitts.	3.00c
Spikes, railroad, Chicago	2.80c
Track bolts, Pitts., steam roads	3.80c
Track bolts, Pitts., stand. jobbers	70 off list
Track bolts, Chicago	3.80c
Tie plates, Chicago, Pitts.	$43.00

BOLTS AND NUTS

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts are for legitimate jobbing or large consuming trade purchasing in full-case lots, apply to lists of April 1, 1927.

Small lots are 55 to 60 per cent off.

CARRIAGE BOLTS

All sizes, cut thread	60 to 70 off

Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.

Eagle list	60 to 70 off

MACHINE BOLTS

All sizes, cut thread	60 to 70 off

Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.

Lag screws	60 to 70 off
Plow bolts, Nos. 1-2-3-7 heads	60 to 70 off
Tap bolts	60 to 70 off
Blank bolts	60 to 70 off
Stud bolts without nuts	60 to 70 off

Stove bolts, 75, 20 10 and 5 off in pkgs., 75, 10, 10 and 5 with 2½ off in bulk.

Tire bolts	60-5 off

Nuts

Semifinished	60 to 70 off

HEXAGON CAP SCREWS

Milled	80-10-5 off
Upset 1 in. diam. and smaller	5 off

SQUARE HEAD SET SCREWS

Milled	80-5 off
Upset 1 in. diam. and smaller	80-10-5 off

RIVETS

Struc., c.l., Pitts.-Cleve.	3.10c
Structural, c.l. Chicago	3.20c
**7/16-inch and smaller, Pitts.	70 and 10 off
Chi., Cleve.	70 to 70 and 10 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Raw Materials and Semifinished Products

SEMIFINISHED STEEL

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$35.00
Pittsburgh, bessemer	35.00
Youngstown	35.00
Cleveland	35.00
Philadelphia	40.30
Chicago	37.00
Forging, Chicago	42.00
Forging, Pittsburgh	40.00
Forging, Philadelphia	45.30

SHEET BARS

Pittsburgh	$35.00
Youngstown	35.00
Cleveland	35.00
Chicago	37.00

SLABS

Pitts., Young.	$35.00
Cleveland	35.00

WIRE RODS

Pittsburgh, Cleveland	$40.00
Chicago	43.00
Youngstown	40.00 to 42.00

SKELP

All grades, Pittsburgh	1.90c

IRON ORE

LAKE SUPERIOR ORE

Per Gross Ton, Lower Lake Ports

Old range bessemer, 51½%	$4.80
Mesabi bessemer, 51½%	4.65
Old range nonbessemer, 51½%	4.65
Mesabi nonbessemer, 51½%	4.50
High phosphorus, 51½%	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%	9.00 to 10.00
Copper-free low phos. 58-65%	nominal

FOREIGN ORE

Cents per units, alongside docks

Atlantic ports

Foreign manganiferous ore, 45-55% iron, 10-12% manganese	12.00 to 12.50
North African low phosphorus	12.50
Swedish basic, 65%	10.50
Swedish low phosphorus	12.00
Spanish and North African basic, 50 to 60 per cent	11.50 to 12.00
Newfoundland foundry, 55%	nominal
Tungsten future, short ton unit, duty paid	15.15 to 15.50
Chrome, 48-50%, c.i.f. long ton	24.00 to 25.00

MANGANESE ORE

Prices, not including duty, are cents per unit.

Brazilian (47-48 per cent)	32 cents
Indian	32 to 34 cents
Caucasian, (50-55 per cent)	32 to 34 cents

FLUORSPAR

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$18.00
Washed gravel, import duty paid east, tide., gross ton	$21.00

REFRACTORIES

FIRE CLAY BRICK

Per 1000 f.o.b. works

First Quality

Pennsylvania	$43.00 to 46.00
Ohio	43.00 to 46.00
Illinois	43.00 to 46.00
Kentucky	43.00 to 46.00
Missouri	43.00 to 46.00
Maryland	43.00 to 46.00
Georgia and Alabama	40.00 to 45.00

Second Quality

Pennsylvania	35.00 to 38.00
Ohio	35.00 to 38.00
Illinois	35.00 to 38.00
Kentucky	35.00 to 38.00
Missouri	35.00 to 38.00
Maryland	35.00 to 38.00
Georgia and Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham	50.00 to 51.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	65.00

MAGNESITE

Net Ton Chester, Pa., and Baltimore base

Dead-burned grain magnesite	40.00

CHROME BRICK

Net Ton Chester, Pa., and Baltimore base

9 x 4½ x 2½	45.00

Pig Iron

Market Is Quieter—Shipments Close to September Rate, but Declining—Tone of Valley Market Is Easier

SALES of pig iron in the past week were near the lowest point of the year, all districts reporting a dearth of new orders. October shipments are close to the September rate, but the movement has slowed up during the latter part of the month. Lake furnaces have been experiencing the best volume of shipments. Chicago producers report October ahead of September. A Chicago steelworks has released some iron for the merchant market, while a cargo of silveries from an eastern lake furnace has sold at 50 cents to $1 under the southern Ohio schedules. A Virginia furnace has blown in, with orders for 16,000 tons at $17.50, base, $1.75 below its previous level, and representative of competition in that district. The tone of the valley market is easier.

PITTSBURGH, Oct. 29.—Activity in the pig iron market shows further decline. Large orders are lacking and small purchases are less plentiful than recently. Inquiry is light, with few large individual lots in prospect. Forward coverage is restricted by the ease with which iron can be obtained, and possibility of lower prices before the end of the year. Shipments from some furnaces are tending downward, although the total movement is holding fairly well to the September rate. The tone of the market is easier, but business does not afford an adequate test. Small lots of No. 2 foundry iron still are $18.50, base, valley, with bessemer and malleable $19. Basic is nominal at $18.50.

Boston, Oct. 29.—Pig iron sales in the past week aggregated 2000 to 2500 tons, including 1000 tons of malleable for a Rhode Island melter. Mystic Iron Works received half of the latter tonnage and a New York state furnace the remainder. The market is quiet and prices unchanged.

New York, Oct. 29.—Trading in pig iron in the past week was the lightest in some time. With the possible exception of 3000 tons of foundry iron for Thatcher Furnace Co., reported placed with an eastern Pennsylvania furnace, orders have been small and scattered. Pending inquiry probably aggregates 5000 tons and includes 300 to 400 tons for the A. P. Smith Mfg. Co. for first quarter. Prices generally are showing little change, Buffalo foundry iron checking back to $17.50 to $18, base, furnace, and southern foundry to $19 to $19.50, delivered New York docks. Trading in southern iron has been light for at least two weeks.

Buffalo, Oct. 29.—Sales and inquiries in the pig iron market have dropped to a low level. Sellers report $18, base, Buffalo, is maintained firmly in the East. Steelworks are offering considerable more iron than they have marketed for the past eight months.

Youngstown, O., Oct. 29.—No large requirement for pig iron is under negotiation in this district. Going business is in carload lots with basic and No. 2 foundry $18.50, valley, and malleable and bessemer $19.

Cleveland, Oct. 29.—The pig iron market is quieter, sales booked by Cleveland furnace interests in the past week amounting to 10,000 tons, compared with 16,000 tons in the week preceding. Current orders are limited to small lots for filling in purposes. The market is in between two buying movements, with melters and furnace interests in no hurry to close for first quarter, and the majority of melters protected for the remainder of this year. Local steelworks furnaces are practically out of the market for November and December, unless there should be a decided drop in their own steelmaking requirements, which is not anticipated. Shipments to the automotive industry show no improvement, but the movement from furnaces to foundries generally is equal to that of September, leading merchant interests report. Prices are unchanged.

Pig Iron Prices

Per Gross Ton

Bessemer, valley furnace	$19.00
Bessemer, del. Pittsburgh	20.76
Basic, valley furnace	18.50
Basic, Pitts., dist. fur.	19.00
Basic del., eastern Pa.	19.75 to 20.25
Basic, Buffalo furnace	18.50
Basic, del., eastern Pa.	19.85 to 20.76
Malleable, valley furnace	19.00
Malleable, Pitts., dist. fur.	19.50
*Malleable, del. Pittsburgh	20.13 to 20.63
Malleable, Cleve. fur. for local del.	19.00
Malleable, Chicago furnace	20.00
Malleable, Buffalo furnace	20.00
Malleable, del. eastern Pa.	21.76 to 22.90
Malleable, Granite City fur.	20.00
No. 1 foundry, Chicago furnace	20.50
No. 1X, Eastern del., Phila.	22.76
No. 1X, Buffalo furnace	21.00
No. 2 foundry, valley furnace	18.50
No. 2 fdy., Pitts. dist. fur.	19.00
*No. 2 foundry, del. Pittsburgh	18.63 to 20.13
No. 2 plain, Buffalo furnace	19.50
No. 2 foundry, Chicago furnace	20.00
No. 2 fdy. Cleve. fur. for local del.	19.00
No. 2 fdy., Granite City	20.00
Nc. 2 plain, del., Phila.	21.76
No. 2 plain, Virginia furnace	17.75
No. 2 plain, Buffalo, del. Boston	21.28 to 21.91
No. 2 plain, N. J., tidewater	20.78 to 21.78
No. 2 Alabama, Bir. base	14.00 to 14.50
No. 2 Tenn., Birmingham base	14.00 to 14.50
No. 2 Tenn., del. Cincinnati	17.69 to 18.19
No. 2 Alabama, del. Cincinnati	17.69 to 18.19
No. 2 Alabama, del., Cleveland	20.51 to 21.01
No. 2 Alabama, del. Chicago	19.01 to 20.01
No. 2 Alabama, del. St. Louis	18.42 to 18.92
No. 2, Ala., Phila., dock dely.	19.25 to 19.75
No. 2 Ala., Balt., dock dely.	19.00 to 19.50
No. 2 Ala., N. Y. dock dely.	19.00 to 19.50
No. 2 Ala., Boston, dock dely.	20.75
No. 2X, east., N. J., tidewater	21.28 to 22.28
No. 2X, eastern, del. Phila.	22.26
No. 2X, foundry, Buffalo furnace	20.00
No. 2X, Buffalo, del. Boston	22.28 to 22.78
No. 2X, Virginia furnace	18.25
Gray forge, Pitts. dist. fur.	18.50
*Gray forge, del. Pittsburgh	19.13 to 19.63
Low phos., standard, valley	27.00
Low phos., standard, Phila.	24.76
Low phos., copper bearing fur.	23.00 to 24.00
Charcoal, Superior, del., Chicago	27.04

*Freight from Pittsburgh district furnace to points in Pittsburgh district 63c, 76c and $1.13 per ton.

CANADIAN PRICES

No. 1 foundry, del. Toronto	$23.60
No. 1 foundry, del. Montreal	25.00
No. 2 foundry, del. Toronto	23.10
No. 2 foundry, del. Montreal	24.50
Malleable, del. Toronto	23.60
Malleable, del. Montreal	25.00
Basic, del. Montreal	23.50

Silvery iron Jackson county, O., furnaces in per cents: 5—$22; 6—$23; 7—$24; 8—$25; 9—$26; 10—$28; 11—$30; 12—$32; 13—$34.

Bessemer ferrosilicon, Jackson county, O., furnaces, in per cents: 10—$30; 11—$32; 12—$34; 13—$36; 14—$38; 15—$41; 16—$43.50 17—$46.50.

Chicago, Oct. 29.—Northern pig iron quotations remain steady at $20, base, Chicago furnace. Interest in the market is centered chiefly in spot fill-in tonnages. Occasional informal inquiries appear for first quarter. Almost the entire current furnace production is being shipped against contracts.

October shipments are slightly ahead of the September rate. A local steelworks interest has released 2000 to 3000 tons for merchant orders. A cargo of 8 to 10 per cent silvery iron has been landed here from an eastern lake furnace and sold in this district at 50 cents to $1 under the southern Ohio schedules.

Cincinnati, Oct. 29.—Reduced activity was noted in pig iron buying in this district during the past week, with the total of 3300 tons sold in small lots. Shipments against orders for southern iron are continuing steadily and in good volume. Prices remained firm.

St. Louis, Oct. 29.—While new buying of pig iron is not of impressive size, shipments are holding up well. Forwardings thus far in October have dropped slightly below the September average, but are considerably larger than at the corresponding period last year.

Moderate inquiry for first quarter has developed, but little tonnage for 1930 has been placed. Sales in the past several days totaled approximately 6000 tons, including 2000 tons of basic booked by the St. Louis Gas & Coke Corp. for an east-side mill. A jobbing foundry in this district took 1000 tons, and 1000 tons went to a similar establishment in Iowa. Prices are unchanged.

Birmingham, Ala., Oct. 29.—Small sales of pig iron are numerous, but

(*Concluded on Page* 1130)

Coke

Production Further Reduced—Steelworks Coke Output Lowest of Year—Markets Quieter

COKE output by steelworks ovens in the Pittsburgh district is at the lowest point of the year. The H. C. Frick Coke Co. has blown out 747 ovens in addition to 313 reported last week. Merchant activity still is the best in two months. Demand for furnace and foundry coke is light, and orders for heating fuel are not as large as anticipated.

Pittsburgh, Oct. 29.—Sales of beehive coke are light. Furnace fuel is moving in small lots at $2.65 to $2.75, with supply sufficient for the demand. Foundry coke continues quiet at unchanged prices. Orders for heating coke are slow to increase, and crushed coke for domestic use is less active. Production has been further reduced, with the H. C. Frick Coke Co. taking off an additional 747 ovens, leaving only 80 active. Output from steelworks ovens now is the lowest of the year, but merchant production is the best in two months.

Production of coke in the Connellsville region for the week ended Oct. 19 was 57,360 tons, compared with 70,300 tons the preceding week and 62,850 tons for the same period a year ago.

Boston, Oct. 29.—Foundry coke orders are on a hand-to-mouth basis. Local ovens will open books for first half Nov. 1.

New York, Oct. 29.—Beehive furnace coke here continues to check back to $2.75 to $3 a ton, Connellsville. The foundry grade also is unchanged at $3.75 to $4.85, Connellsville. By-product coke is steady at $9 to $9.40, delivered, Newark; $11, delivered New England points, and $9, delivered Philadelphia. Demand is quiet.

Cincinnati, Oct. 29.—By-product foundry coke specifications of melters, except those affected by automotive conditions, are normal. The total for October is about 20 per cent less than in September. Prices are steady.

St. Louis, Oct. 29.—Coke specifications are heavy and there is a fair volume of new orders for foundry grades. Except in a few instances, consumer stocks are below average for this time of year. Industrial coke continues in good demand. Prices are steady.

Birmingham, Ala., Oct. 29.—Operations at by-product coke works are steady. Alabama foundry coke still is being shipped to other states. Prices are unchanged.

Coke Prices

Prices per Net Ton

Beehive Ovens	
Connellsville furnace	$2.65 to 2.75
Connellsville foundry	3.75 to 4.85
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25
By-Product Foundry	
Newark, N. J., del.	$9.00 to 9.40
Chicago ovens	8.00
New England del.	11.00
St. Louis del.	9.00
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ov., Connell. basis	6.50
Portsmouth, O., ov., Connell. basis	6.50
Buffalo ovens	8.75
Detroit, ovens	9.00
Philadelphia, del.	9.00

Ferroalloys

Shipments Steady—Spot Market Is Quiet

New York, Oct. 29.—Specifications on spiegeleisen have been in excess of some trade expectations. One leading seller asserts shipments this month will equal, if not exceed, those of September. The market on domestic spiegeleisen, 19 to 21 per cent, is $34, furnace, and on English spiegeleisen of the same content, $34, duty paid. This latter is available for shipment from abroad in November and December. On a higher English grade of spiegeleisen the market is virtually nominal, as little material is offered. Ferromanganese shipments also have been maintained, with the market $105, duty paid.

Special ferroalloys are quiet and unchanged except that tungsten consumption is reported to be holding nearer to the highest level than others. Ore prices range from a little over $15, a short ton unit, duty paid, for wolframite to $16.50 for scheelite.

Pittsburgh, Oct. 29.—The spot market for ferroalloys is quiet, although the movement against contracts is steady. Ferromanganese and spiegeleisen continue the most active alloys in shipment. The market on these two grades has remained steady at $109.79, delivered Pittsburgh, and $34, furnace, respectively, throughout the year. No announcement on next year's prices is expected for a number of weeks and despite the tariff situation little talk is heard of any change from current quotations. Prices on other alloys generally are steady.

Chicago, Oct. 29.—Less than carload orders for ferromanganese and 50 per cent ferrosilicon are of important volume, as electric furnace operations in the district are active. Shipments of ferroalloys are 10 to 15 per cent under the peak of July and August, owing to the declines in steelmaking.

Bolts, Nuts, Rivets

Specifications Steady at Reduced Rate With Fair Total

NUT AND BOLT PRICES, PAGE 1126

Pittsburgh, Oct. 29.—Specifications for bolts, nuts and rivets are steady at the slower rate that has prevailed so far this month. Jobbers are making lighter commitments but railroads and miscellaneous buyers are specifying in fair voume, giving total business a fair comparison with conditions a year ago. Operations for the district average 65 to 75 per cent. Prices remain steady at 60 to 70 off for bolts and nuts, and 3.10c, Pittsburgh, for large rivets.

Chicago, Oct. 29.—Sellers of bolts, nuts and rivets feel the pinch of light automotive tonnage, but are encouraged by steady shipping orders from the implement industry. October tonnage is about equal to September, but individual orders were lighter. Railroad and railroad supply orders are contributing to heavier specifications for certain lines of bolts and rivets. Structural rivets are reported steady at 3.20c, Chicago, in carload lots, while small rivets are 70 to 70 and 10 off list.

New York, Oct. 29.—Trading in bolts and nuts continues to lag, showing little improvement over the past two or three weeks. Notwithstanding recent railroad buying of rails the local bolt and nut trade has profited little. Much the same is true with regard to shipbuilding activities. Meanwhile, prices are unchanged with operations about 60 to 65 per cent.

Cleveland, Oct. 29.—Nuts and bolts show little improvement. Small orders are fairly frequent but producers operate at no higher than 60 to 65 per cent. Prices remain firm despite pressure. Rivet business has tapered with lowered demand from plate fabricating shops.

Ferroalloy Prices

(In dollars, except ferrochrome)

Ferromanganese, 78 to 82 per cent tidewater, duty paid	$105.00
Ferromanganese, del. Pittsburgh	109.79
Spiegeleisen, 19 to 21 per cent, domestic furnace, spot†	34.00
*Ferrosilicon, 50 per cent, freight allowed, carloads	83.50
*Do., less carload	88.50
Do., 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. per lb. con., del.	11.00
Do., for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.45
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producer's plant, net ton	160.00
Do., one ton to carload	170.00
Ferrophosphorus, per ton, carload 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23-25% f.o.b. Anniston, Ala. (24 per cent)	122.50

†Carloads. Differentials apply to large quantities.

*These prices contract, spot $5 higher.

Scrap

Further Declines Met as Melters Refrain From Buying—Shipments Being Held Back

EXPECTED strength has failed to materialize in iron and steel scrap, and delayed buying by consumers has resulted in a continued slow decline in prices. In some centers important consumers have ordered shipments held back and distress tonnage has resulted. Dealers hope railroad equipment buying will help.

Chicago, Oct. 29.—Expectations of dealers that the recent downward trend of iron and steel scrap prices had been stemmed are not being borne out. Further declines of 25 to 75 cents are shown in asking prices and consumer sales, chiefly in railroad scrap. Several quotations on heavy melting steel have been made at $14.50, or 25 cents under the recent market. A continued flow of scrap from producers, weakness in outside markets and occasional slowing down of shipments have helped precipitate the further slump. Moderate quiet buying is reported from steel foundries and important tonnages of electric furnace scrap have been moved, although electric furnace grades are tending to succumb to price weakness. The outlook for improved steelworks operations next month is a supporting influence to an otherwise depressed market.

Boston, Oct. 29.—While little business was done by scrap dealers the past week, it is to be noted that prices showed a generally firmer range, which had a hopeful aspect. The expectation is that buying by mills will resume soon. The steamer loading

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	10.50 to 13.50
Boston, dealers	10.75 to 11.25
Boston, No. 2	10.50 to 11.00
Buffalo, No. 1	15.00 to 16.50
Buffalo, No. 2	13.50 to 14.00
Chicago	14.25 to 14.75
Cincinnati, deal.	13.00 to 13.50
Cleveland, No. 1	15.25 to 15.75
Cleveland, No. 2	14.00 to 14.50
Detroit, No. 1 deal.	13.00 to 13.50
Detroit, No. 2 deal.	11.75 to 12.00
East Pa., del. mill	15.50
N. Y., deal. R. R.	12.00 to 12.35
N. Y., deal. yd.	8.00 to 8.25
Pittsburgh, No. 1	16.50 to 17.50
St. Louis, No. 1	13.50 to 14.00
Valleys, No. 1	17.00 to 17.50

COMPRESSED SHEETS

Buffalo (dealers)	13.50 to 14.00
Chicago	12.50 to 13.00
Cleveland	14.75 to 15.25
Detroit, dealers	13.00 to 13.50
E. Pa. new mat.	14.50 to 15.00
Pittsburgh	16.75 to 17.25
Valleys	16.00 to 16.50

BUNDLED SHEETS

Buffalo	10.50 to 10.75
Cincinnati, deal.	10.75 to 11.25
Cleveland	12.50 to 13.00
Eastern Pa.	11.50 to 12.00
Pittsburgh	15.50 to 16.00
St. Louis	9.00 to 9.50

SHEET CLIPPINGS LOOSE

Chicago	8.50 to 9.00
Cincinnati	8.50 to 9.00
Detroit, dealers	9.00 to 9.50
St. Louis	9.50 to 10.00

STEEL RAILS, SHORT

Birmingham	14.00 to 15.00
Boston	10.50 to 10.75
Buffalo	18.00 to 18.50
Chicago (3 feet)	16.75 to 17.25
Chicago, 2 ft. and under	18.50 to 19.00
Cincinnati, deal.	18.25 to 18.75
Detroit, dealers	17.00 to 17.50
Pittsburgh (3 ft.)	19.50 to 20.00
Pittsburgh, 2 feet and under	20.50 to 21.00
St. Louis	18.00 to 18.50

STOVE PLATE

Birmingham	11.00 to 12.00
Boston consumers	11.00 to 11.50
Buffalo	12.50 to 12.75
Chicago, net	11.00 to 11.50
Cinn., deal., net	9.00 to 9.50
Detroit, net, deal.	9.50 to 10.00
Eastern Pa.	12.00
N. Y., deal., mill	8.00 to 8.50
St. Louis	12.25 to 12.75

COUPLERS, SPRINGS

Buffalo	17.00 to 17.50
Chicago	17.00 to 17.50
Eastern Pa.	21.00
Pittsburgh	20.00 to 20.50
St. Louis	15.75 to 16.25

ANGLE BARS—STEEL

Chicago	16.50 to 17.00
St. Louis	15.50 to 16.00

LOW PHOSPHORUS

Buffalo, billets and bloom crops	18.50 to 18.75
Cleve. billet and bloom crops	18.00 to 18.50
Eastern Pa.	21.00 to 22.00
Pitts. billet and bloom crops	22.00 to 22.50
Pitts. sheet bar crops	21.50 to 22.00

FROGS, SWITCHES, GUARDS

Chicago	15.25 to 15.75
St. Louis	15.50 to 16.00

SHOVELING STEEL

Chicago	14.25 to 14.75
Cleveland	11.50 to 12.00
St. Louis	13.50 to 14.00

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	11.00 to 12.00
Boston, dealers	10.50 to 11.00
Buffalo, No. 1	13.00 to 13.50
Buffalo, No. 2	15.00 to 16.00
Chicago, No. 1	14.50 to 15.10
Chicago, No. 2	14.25 to 14.75
Cincinnati, No. 2	13.00 to 13.50
Eastern Pa.	16.00 to 16.50
N. Y., No. 1 deal.	12.00 to 12.50
Pittsburgh, No. 2	17.00 to 17.50
St. Louis, No. 1	13.75 to 14.25
St. Louis, No. 2	13.50 to 14.00

SPECIFICATION PIPE

Boston	9.25 to 9.50
Eastern Pa.	14.50
New York, deal.	10.25

BUSHELING

Buffalo, No. 1	13.50 to 14.00
Chicago, No. 1	12.50 to 13.00
Cinn., No. 1 deal.	10.75 to 11.25
Cinn., No. 2	7.00 to 7.50
Cleveland, No. 1	14.00 to 14.50
Cleveland, No. 2	10.00 to 10.50
Detroit, No. 1 deal.	12.00 to 12.50
St. Louis, No. 1	10.00 to 10.50
Valleys, new No. 1	15.50 to 16.00

MACHINE SHOP TURNINGS

Birmingham	7.00 to 8.00
Boston	6.75 to 7.00
Buffalo	8.75 to 9.25
Chicago	7.50 to 8.00
Cincinnati, deal.	8.00 to 8.50
Cleveland	10.25 to 10.75
Detroit	7.75 to 8.00
Eastern Pa.	12.00
New York, deal.	7.50 to 8.00
Pittsburgh	11.00 to 12.00
St. Louis	7.50 to 8.00
Valleys	12.25 to 12.50

MIXED BORINGS, TURNINGS
For blast furnace use

Boston, dealers	6.00 to 6.50
Buffalo	11.00 to 11.50
Cincinnati, deal.	8.25 to 9.25
Cleveland	10.75 to 11.00
Detroit, dealers	9.00 to 9.25
Eastern Pa.	11.00
New York, deal.	7.00 to 7.25
Pittsburgh	11.00 to 12.00

CAST IRON BORINGS

Birmingham, chem.	13.00 to 13.50
Birmingham, plain	7.00 to 8.00
Boston, chem.	9.00 to 9.50
Boston, dealers	6.75 to 7.00
Buffalo	11.00 to 11.50
Chicago	9.75 to 10.25
Cincinnati, deal.	8.75 to 9.25
Cleveland	10.75 to 11.25
Detroit, dealers	8.75 to 9.25
Eastern Pa.	11.50
Eastern Pa., chem.	14.50
New York, deal.	7.25 to 7.75
Pittsburgh	11.50 to 12.00
St. Louis	9.50 to 10.00

PIPE AND FLUES

Cincinnati, deal.	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	11.00 to 11.50
Chicago, net	11.75 to 12.25
Cincinnati	10.00 to 10.50
Eastern Pa.	12.00 to 12.50
New York, deal.	8.75 to 9.25
St. Louis	13.00 to 13.50

FORGE FLASHINGS

Boston, dealers	9.50 to 10.00
Buffalo	13.50 to 14.00
Cleve. over 10 in.	13.50 to 14.00
Detroit	12.00 to 12.50

FORGE SCRAP

Boston, dealers	8.50 to 9.00
Chicago	18.50 to 19.00
Eastern Pa.	14.00

ARCH BARS AND TRANSOMS

Chicago, net	19.00 to 19.50
St. Louis	21.50 to 22.00

Iron, Steel Works Scrap

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	14.00 to 14.50
Chicago steelworks	12.00 to 12.50
Cleveland	14.00 to 14.50
Eastern Pa.	15.00
Pittsburgh	15.50 to 16.00
St. Louis	10.00 to 10.50

STEEL CAR AXLES

Birmingham	17.00 to 18.00
Boston, ship point	17.50 to 18.00
Buffalo	17.50 to 18.00
Chicago	18.50 to 19.00
Eastern Pa.	23.00 to 23.50
Pittsburgh	21.00 to 22.00
St. Louis	19.50 to 20.00

SHAFTING

Boston, ship point	14.00 to 14.25
Chicago	17.35 to 17.90
Eastern Pa.	19.50
New York, deal.	14.00 to 14.50
St. Louis	18.50 to 19.00

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	11.50 to 12.50
Boston, iron	14.00 to 14.50
Buffalo, iron	13.00 to 13.50
Buffalo, steel	17.50 to 18.00
Chicago, iron	14.00 to 14.50
Chi., rolled steel	19.00 to 19.50
Cincinnati	12.50 to 13.00
N. Y., iron, deal.	12.00 to 12.50
Pittsburgh, iron	15.50 to 16.00
Pittsburgh, steel	20.00 to 20.50
St. Louis, iron	15.00 to 15.50
St. Louis, steel	17.75 to 18.25

No. 1 CAST SCRAP

Birmingham, cup.	12.50 to 13.50
Buffalo	15.25 to 15.75
Boston, textile	14.00 to 14.50
Chicago, mach.	15.65 to 16.25
Chicago, railroad	15.10 to 15.65
Chicago, agri.	15.10 to 15.70
Cincinnati, mach. cupolas, gross	18.25 to 18.75
Cleveland, cupola	15.75 to 16.25
Detroit, net, deal.	12.00 to 12.50
East Pa., cupola	16.00
N. Y. cup. deal.	12.50 to 13.00
N. Y., del. local foundries	17.00
Pittsburgh, cupola	15.00 to 16.00
San Fran., del.	13.50 to 14.00
Seattle	14.50 to 14.75
St. L. No. 1 mach.	15.25 to 15.75
St. Louis, No. 1	14.50 to 15.00

HEAVY CAST

Boston	10.50 to 11.00
Buffalo, breakable	11.00 to 11.50
Cleve., breakable	12.50 to 12.75
Detroit, auto, net dealers	12.00 to 13.00
Detroit, break. deal	9.50
Eastern Pa.	14.00 to 14.50
New York, deal.	11.00 to 11.50
Pittsburgh	11.00 to 12.00

MALLEABLE

Boston, railroad	18.50 to 19.00
Buffalo	17.25 to 17.50
Chicago, agri.	15.50 to 16.00
Chicago, railroad	17.00 to 17.50
Cinn., R. R., deal.	15.25 to 15.75
Cinn., agri., deal.	14.25 to 14.75
Cleveland, rail	18.00 to 18.50
Detroit auto deal.	15.00 to 15.50
St. Louis	16.25 to 16.75

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	13.50 to 14.50
Boston	12.00 to 12.50
Buffalo	15.00 to 15.50
Chicago	16.00 to 16.50
Eastern Pa.	16.50 to 17.00
New York	12.75 to 13.25
St. Louis	16.25 to 16.75

LOCOMOTIVE TIRES

Chicago, cut	18.50 to 19.00
St. Louis, No. 1	15.50 to 16.00

LOW PHOS. PUNCHINGS

Chicago	16.50 to 17.00
Pittsburgh	19.50 to 20.00

rails for Egypt has sailed. Heavy melting steel, pipe and one or two other lines are firmer.

New York, Oct. 29.—Clean cast borings are off 25 cents a ton, with dealers offering $7.25 to $7.75, and in at least one instance lower. Prices otherwise are unchanged, although there is little business to test the market in some grades. No. 1 railroad steel is steady at $12 to $12.35, New York, and yard steel for eastern consumption at $8 to $8.25, New York.

Philadelphia, Oct. 29.—Principal developments of the iron and steel scrap market are round lot sales of borings and heavy breakable cast at lower prices. Bethlehem Steel Co. has bought a substantial tonnage of breakable cast at $14, delivered at Bethlehem. Heavy melting steel remains at $15.50, delivered.

Buffalo, Oct. 29.—A large melter has ordered dealers to suspend shipments of scrap. This has resulted in considerable distress tonnage. Such tonnage has been sold well under prices recently quoted. Stove plate on track sold at $12.50 and several other materials reached new lows for six months or more. No inquiry of consequence was noted this week.

Cleveland, Oct. 29.—The leading consumer of iron and steel scrap in this district has cut off shipments of all open-hearth grades. As a result brokers have curbed buying of these grades and prices are nominal. A second consumer continues to take some steel, for which dealers are offering around $15.50. The third consumer continues a minor factor in the market. The local consumer of No. 2 busheling continues out of the market and this grade is bringing no more than $10.50. However, specifications continue active for borings and mixed borings and turnings with brokers offering around $11.25.

Cincinnati, Oct. 29.—Iron and steel scrap shows little activity. Weakness is shown throughout the list and lower prices are offered on at least 10 items. Two special railroad lists are current, the Southern for 3000 tons and Chesapeake & Ohio for 4000 tons.

St. Louis, Oct. 29.—Iron and steel scrap hold about steady. Current buying is in fair volume, and melters would considerably enlarge their takings were it possible to arrive at terms with sellers. With no surplus of stock, however, dealers are assuming a rather stiff position, with the result that little is changing hands.

Birmingham, Ala., Oct. 29.—Steel scrap still is finding a little demand and heavy melting steel in particular is moving well. Iron grades remain slow. Heavy melting steel continues firm at $13.50 for best quality with $10.50 to $11, delivered, for the general run.

Toronto, Ont., Oct. 29.—Some improvement in demand for scrap is reported by both Toronto and Montreal dealers. Current sales of steel scrap have stepped up slightly, but mills continue to take only small tonnages. Foundries and other consumers of iron scrap are maintaining a steady demand with some large tonnages involved in recent transactions. Prices remain unchanged.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axles	$22.00
Steel axles	20.00
Car wheels	16.00
Stove plate	13.00
Wrought pipe	6.00
Turnings	6.50
Heavy melting steel	8.00

TORONTO

Steel axles	15.00
Iron axles	17.00
Heavy melting steel	9.50
Turnings	7.50
No. 1 mach. cast (net)	16.00
Malleable (net)	12.50

Semifinished Steel

Specifications Reduced—Rerolling Billets Reported at $34

SEMIFINISHED STEEL PRICES, PAGE 1126

Pittsburgh, Oct. 29.—All grades of semifinished steel are in a quiet market, as regards new business and shipments against contracts. Nonintegrated users are fairly well supplied and in view of lighter operations of finishing mills have reduced their specifications accordingly. Prices are under pressure and some reports are heard of $34 on rerolling billets although the market generally continues $35 for this material and for slabs and sheet bars. Forging billets and wire rods continue firm at $40.

Philadelphia, Oct. 29.—Moderate sales of billets are noted at $35, base, Pittsburgh for rerollers, and $40 for forging quality.

Youngstown, O., Oct. 29.—Sheet bar specifications are curtailed slightly this week in line with a slackening in sheet mill operation. Billets, slabs and sheet bars are $35, Pittsburgh and Youngstown, and wire rods $40, Pittsburgh and Cleveland.

Cleveland, Oct. 29.—Specifications for sheet bars, billets and slabs have fallen off, and the leading merchant producer here now is scheduled seven to eight days ahead. Eleven of its open hearths are in operation. Prices are unchanged.

Pittsburgh, Oct. 29.—Iron and steel scrap is unchanged from the conditions of a week ago. Most mills remain uninterested in new buying but prices are holding better than the light buying of two months would indicate. Dealers can buy heavy melting steel at $16.50 to $17 with $17 to $17.50 the general range to consumers. No large surplus overhangs the market and lighter production matches reduced demand.

Pig Iron

(*Concluded from Page* 1127)

the aggregate is not large. Shipments continue active, steadily reducing surplus stock. Prices for the remainder of the year are $14 to $14.50, base, furnace, for local delivery, and $1 less for competitive sections. The price base for first quarter will be $15 to $15.50. One of the largest consumers, in the pipe industry, reports a decided recession in demand and production will ease off. Many other shops, however, are active and pig iron output is increasing. Fifteen Alabama blast furnaces are in operation, seven on basic, seven on foundry and one on special iron.

Philadelphia, Oct. 29.—The Pulaski Iron Co., Pulaski, Va., resumed production of pig iron today. This interest sold more than 16,000 tons in the past week. The new price is $17.50, base, furnace, which is $1.75 below the previous figure. It is based on current competition in Virginia.

Although the melt at some consuming plants is somewhat reduced, shipments are good. Pipe makers are not buying. Eastern Pennsylvania foundry is usually $21, base, furnace, although lower is occasionally quoted because of outside competition. Moderate sales of low phos have been made at $24.76, delivered Philadelphia, for copper free. Indications are considerable basic will be placed soon.

Toronto, Ont., Oct. 29.—Spot buying is the most prominent feature of the Canadian pig iron market at present. Tonnages are well up to the high average for the year. Merchant iron deliveries are in large volume. Prices are firm.

Operating Rates

Chicago Declines to 80, Pittsburgh Unchanged, Youngstown Down

Chicago—Steel ingot output in the district is about 80 per cent. Rolling mill schedules are virtually unchanged except that sheet mill activity is a few points below a week ago. Illinois Steel Co. has eight active steelworks blast furnaces at Gary, seven at South Chicago and one at Joliet. Inland Steel Co., and Youngstown Sheet & Tube Co. are operating four and two furnaces, respectively, at Indiana Harbor. Wisconsin Steel Co. has three stacks in blast at South Chicago. Thus 25 of the 36 steelworks furnaces in the district are blowing.

Pittsburgh—Steelmaking operations are unchanged at 80 to 85 per cent although schedules of some finishing mills continue downward. Sheet mills are unchanged at 75 to 80 per cent but tin plate production is lower at 70 to 75 per cent. Strip mills are down to 50 per cent, with pipe mills unchanged at 70 to 75 per cent.

Youngstown, O.—Open-hearth departments of independent steelmakers are operating this week at 59 per cent, representing 30 of 51 furnaces, or a decline of 10 per cent from a week ago. Hot sheet mill operations have receded slightly, with 80 of the 120 mills active or 67 per cent. Strip capacity engaged stands at 70 per cent. Independent barmakers are maintaining a 70 per cent schedule and Corporation mills 80 per cent. Fifteen of the 21 pipe furnaces are active.

Bars

Steel for Carbuilders Gives Chicago Mills Tonnage—October Specifications Over September

CHICAGO mills find bar specifications are largely in carload lots, but not much in less-carloads. Carbuilders are taking considerable steel, including bars, on recent large contracts for rolling stock. Sales in that market are increasing. Pittsburgh mills are giving prompt shipments on nearly all sections. Automotive slackness is a great deterrent to buying.

BAR PRICES, PAGE 1125

Chicago, Oct. 29.—Bar mill orders are featured by a predominance of miscellaneous bookings. Much of the tonnage specified is in carload orders. Less-than-carload and mixed carload orders are fewer than ordinarily would be expected in a miscellaneous buying market. Steel for the recent car awards now is of important volume, particularly in light structurals. Cold finished, forging, implement, road and excavating equipment requirements lead bar demand. Implement works report demand for next spring's tillage tools exceeds expectations, although farm equipment production is slightly under a year ago. One producer reports forward finished steel sales in the week just closed heavier than in three preceding 7-day periods, with little rail tonnage included.

Prices quoted for bars, plates and shapes, as reported a week ago, are more generally at 2.00c to 2.05c, Chicago, or $1 under the range that has prevailed as a tonnage differential base since late in the first quarter of this year. Formal acceptance of the 2.00c base is no surprise, since coincident with the relief in the tight steel supply of the spring and summer months, many buyers in the former 2.05c classification had been given the advantage of a 2.00c base. With the adoption of the Pittsburgh base of 1.90c to 1.95c, Chicago district markets had gravitated toward the usual $2 differential over the eastern base.

Pittsburgh, Oct. 29.—Bar specifications showed little change during the past week, with the month to date only slightly improved over September activity. Producers are able to effect prompt shipment on practically all sizes, and with backlogs at a minimum operations are governed largely by the daily rate of specifications. Lack of forward buying by automotive interests is restricting bar activity to a marked extent although demand from other sources is in good seasonal volume. The market generally is 1.90c, Pittsburgh, with 1.95c finding little application.

Cleveland, Oct. 29.—October ends without developing much in the way of improved buying in merchant steel bars. Small orders for immediate needs are the rule. Some orders for automobile rim sections have been placed for late December or early January delivery, because these usually are placed far in advance of shipping dates. Prospects daily grow brighter for better business in November. Outside mills quote 1.90c to 1.95c, Cleveland, and 1.90c, Pittsburgh, on open-hearth bars but 1.95c, Pittsburgh, is minimum on bessemer screw stock.

Republic Acquires Union Drawn Steel Co.

Republic Iron & Steel Co., Youngstown, O., has concluded negotiations for the purchase of the Union Drawn Steel Co., subject to an appraisal and audit to be made by the Republic company, it is announced by E. T. McLeary, president of the latter company. Republic will take charge of the property of the company at an early date and will operate it as a subsidiary under the present management, headed by E. S. Hoopes, president. It is understood the Union Drawn company's property has a net valuation of $14,000.000. Its capitalization consists of a common stock only, $20,000,000 of which was authorized, and $10,000,000 issued. It was incorporated May 6, 1889.

Union Drawn has been the largest purchaser of soft steel bars, and consumed annually about 250,000 tons of steel products in the manufacture of cold drawn steel stock, comprising rounds, squares, flats, hexagons and special shapes; drill rods, crank shafts, connecting rods, elevator guides, racks, keys, taper pins, and steel joists.

The company operates three plants at Beaver Falls, Pa., and plants at Gary, Ind., Hartford, Conn., and Massillon, O. It also owns the Union Drawn Steel Co. Ltd., with plants at Hamilton, Ont. In 1925 it acquired the Peerless Drawn Steel Co., Massillon, O., with an annual capacity of 33,000 tons of merchant bars.

Plates

Miscellaneous Needs Light—Car Orders Holding Up Backlogs in Pittsburgh District

PLATE orders are light and deliveries earlier than in several months. Additional freight car awards are providing some business for mills in eastern districts. Western oil field work is measured by about 5000 tons at Chicago. Conservation programs call for larger tonnages early in 1930. The Chicago price now is 2.00c, with 2.05c, Coatesville, quoted in the East.

PLATE PRICES, PAGE 1125

New York, Oct. 29.—Contract for two Dollar Line boats has been awarded to the Newport News Shipbuilding & Dry Dock Co. These vessels will require 17,500 tons of plates, 7200 tons of shapes and 1500 tons of bars. Erie railroad is inquiring for four tugs requiring approximately 200 tons of plates each. The Pennsylvania railroad has awarded 100 locomotives that will take 4000 tons of plates. Newark water commission will meet Oct. 30 to consider an informal low bid by the International Excavating Co., Jersey City, for supplying and laying 6000 tons of 60-inch steel pipe. The New York water department will close bids Nov. 6 on 3000 tons of 60-inch pipe, this representing a reduction of 1000 tons in its original estimate of the job. Plate prices are unchanged at 2.05c, base, Coatesville.

Philadelphia, Oct. 29.—Plate demand continues good with October total tonnage apparently less than September but above August. In this district, 2.05c, base Coatesville' continues the base on the great majority of individual transactions. Lower prices than that are exceptional. About 4000 tons are involving in Pennsylvania's 100 locomotives just awarded. The United States coast guard is inquiring for a cutter, requiring about 100 tons of steel. It is expected that bids will be taken next month by the United States Lines on two large liners, involving a big tonnage.

Pittsburgh, Oct. 29.—Despite some slowing down in plate activity compared with the midsummer rate, there continues a steady demand which gives business a favorable comparison with conditions a year ago. Additional freight car orders bolster declining backlogs in this line, while occasional orders, for river craft continue to be received. Recent towboat orders require 750 tons. Tank work and miscellaneous requirements show little change from activity a month ago. Plates generally are 1.95c, Pittsburgh, although some tonnage is going at 1.90c.

Cleveland, Oct. 29.—Only moderate

tonnages are involved in plate orders. Local makers operate at about 65 to 70 per cent. Sellers claim to be adhering to 1.95c, Pittsburgh, for the majority of orders. D. Connelly Boiler Co. booked a municipal power station contract for Lansing, Mich., requiring four large 575-pound pressure boilers. Five to eight carloads of plates will be needed. The Lima, O., locomotive builder is expected to purchase at least 750 tons for locomotives awarded it by Pennsylvania railroad. The city probably will close this week on its water line, taking 3000 to 4000 tons.

Chicago, Oct. 29.—Plate mill deliveries are three to four weeks on most sections, with operations at about 80 per cent. A western fabricator took 1000 tons of plates for unstated refinery work in the Southwest, while 4000 tons are out in inquiry from the Texas oil fields. Prospects in the oil country are indefinite, but conservation programs indicate that equipment buying late this quarter or early next year will be in important volume for transportation and storage. The Milwaukee fabricator of welded pipe again is taking heavy shipments of plates for pipe line work. The quotation of 2.00c, Chicago, now is the base price on tonnage plate business.

CONTRACTS PLACED

750 tons, plates and shapes, three towboats, two for Jones & Laughlin Steel Corp., and one for the Dixie Sand & Gravel Co., Chattanooga, Tenn.; to Howard Shipyards & Dock Co., Jeffersonville, Ind.

Country Is Gripped by Craze for Mergers

Detroit, Oct. 29.—The country is in the grip of a merger craze induced by favorable public and political attitude, outstanding engineering developments and American love of large-scale activity, was the statement made by O. W. Visscher, editor, *Business Bulletin*, LaSalle Extension university, in an address made here today before the opening session of the American Management association. The speaker enumerated 12 advantages brought about by mergers and said the human angle of mergers is most important. Big business needs big men, but will never lack the stimulus provided by the competition of new small aggressive enterprises.

A. D. Berning, Ernst & Ernst, New York, listed five factors to consider in forming a merger, namely, economic and legal soundness, proper management, ample financing, good earnings of constituents and fair acceptable plan for the consolidation. The stock market crash of the last few days can be regarded as an incentive to turn industry's attention again to problems of production and management, according to Mr. Berning.

The annual meeting of the American Management association is being held here at the Hotel Statler and will continue through Nov. 1.

Pipe

Municipal Pipe Buying Slow—Foundries Disinclined to Accept Spring Tonnage on Present Bases

PRIVATE business in pipe continues good. Municipal lettings are few and of small dimensions, 100 to 250 tons at a time. Utility companies in the East are sounding out the market but foundries are reluctant to load up for spring shipment at existing bases. Santa Ana, Calif., has 449 tons up. Early line pipe inquiry is expected in Pittsburgh area. Jobbers buy steel pipe sparingly.

PIPE PRICES, PAGE 1126

Pittsburgh, Oct. 29.—Pipe demand so far in October is holding approximately to the September rate. Backlogs of merchant pipe show a steady seasonal decline. Little additional line pipe work is coming out to supplement old orders which are being worked off. However, while no additional inquiries are appearing, such work in the past has developed rapidly and the trade is confident more lines will soon come to inquiry stage. Mechanical tubing holds to its recent slow pace but locomotive and boiler tubing continue in good demand. Oil country requirements of tubular products are steady and fairly heavy for this period. Mill operations are unchanged at 70 to 75 per cent.

New York, Oct. 29.—Cast pipe prices continue easy. Volume of business moving is small and the expected revival of buying by municipalities has been slow to develop. Foundries continue to operate around 60 per cent, being busier on larger sizes. The 250 tons of 12-inch cast pipe for Manhattan was placed.

Youngstown, O., Oct. 29.—Demand for large diameter lapwelded pipe has declined and mill schedules are not as tight as they were a few days ago. Merchant pipe specifications continue to keep mills engaged on a well balanced basis. Pipemakers operate at 71 per cent this week as compared with 67 per cent a week ago.

Cleveland, Oct. 29.—Buttweld steel pipe orders are fewer. Jobbers appear to have good stocks and only buy to fill in as they become depleted. Immediate shipments are procurable, although on lapweld the mills still need longer time, shipments of the latter grade still being heavy to the oil and gas country. Cleveland is expected to purchase 48 and 60-inch steel pipe this week for a water line. It recently bought an additional tonnage in extending its program of changing street lights from gas to electricity. Northern Ohio pipe mills operate at about 70 per cent.

Chicago, Oct. 29.—Prospective buyers of iron pressure pipe in this market are slow to make known their probable winter programs. Little progress is expected before late in December. Glenview, Ill., awarded 200 tons of 6 and 8-inch pipe, and Grosse Ile, Mich., 200 tons of 6 to 10-inch pipe through contractors, Operations of the pipe producers average about 50 per cent. Carload prices are holding in the North Central markets at $37 to $38, base, Birmingham.

Boston, Oct. 29.—Two contracts, aggregating 250 tons, were awarded, 100 ton for Swampscott, Mass., and 150 tons for Ayer, Mass. Private business continues good. Prices are firm. Several large utility companies are feeling out the market for the early part of 1930, seeking to take advantage of present low prices. It is understood that foundries are not enthusiastic about accepting larger orders for spring delivery on existing bases.

Birmingham, Ala., Oct. 29.—Demand for pipe of late has been confined to small tonnages. The market is decidedly slower, being practically at its lowest ebb for the year. Specifications are in sight, however, which will warrant plant operation until the spring buying starts in. A large amount of pig iron still is being melted on old pipe contracts and shipments are active. Quotations are held firmly to at $37 to $38 on 6-inch and over sizes.

CONTRACTS PLACED

250 tons, 12-inch cast pipe, Manhattan, N. Y., to unstated interest.
200 tons, 6 and 8-inch cast pipe for Glenview, Ill., awarded through contractor.
200 tons, 6, 8 and 10-inch pipe for Grosse Ile, Mich., awarded through contractor.
150 tons, 8-inch pipe, Ayer, Mass., to Warren Foundry & Pipe Co.
100 tons, 6 and 8-inch pipe, Swampscott, Mass., to United States Pipe & Foundry Co.

CONTRACTS PENDING

449 tons, 2 to 8-inch class B, improvement Dana Point, Santa Ana, Calif. Bids Nov. 15.
287 tons, 4 to 10-inch class 150, University of California, Berkeley, Calif. Bids opened.

Will Hold Conference

The First Ohio Management conference, sponsored by the Metropolitan Life Insurance Co., New York., will be held in Columbus, O., Nov. 20 at the Deshler hotel. The subject of the conference is "Readjusting Business Policies to Fit the Consolidation Era." The afternoon program will open at 2 p.m. and included are discussions of many important problems of commodity distribution.

Some of the speakers and their subjects are: George M. Verity, president, American Rolling Mills Co., Building for Profits on Consumer Good-Will; Saunders Norvell, president, Remington Arms Co. and Remington Cash Register Co., Lessons from Current Business trends; and James D. Tew, president, B. F. Goodrich Co., The Manufacturer's Responsibility to His Dealers.

Tin Plate

Production Normal — Repetition of Price for First Half Expected

TIN PLATE PRICES, PAGE 1126

Pittsburgh, Oct. 29.—Tin plate operations show a substantial decrease compared with the rate a week ago although production is seasonally high. The current rate of 70 to 75 per cent is considered normal for this period with practically all material for packers' cans requirements shipped. Some current production is in anticipation of next spring's requirements, although there continues a fairly steady demand for tin plate for general line cans. Tin plate continues $5.35 per 100-pound base box, Pittsburgh, although no announcement has been made of the price for the first half of 1930. This figure is expected shortly and no change is looked for from the current quotation.

Iron Ore

Shipments Now About 8,500,000 Tons Ahead of Total for 1928

IRON ORE PRICES, PAGE 1126

Cleveland, Oct. 29.—While complete returns for Lake Superior iron ore shipments for October are not in, the vessel movement in the first 25 days indicates a total of 8,130,000 tons for the month. The highest record for an October shipment was established in 1926, with 9,337,000 tons. With 8,130,000 tons added to the previous total, the tonnage to Nov. 1 will be 61,394,000. So far the vessel and all-rail movement this year is approximately 8,500,000 tons ahead of the total for the entire season of 1928. It remains to be determined whether this will be a banner year, as unfavorable weather conditions have developed earlier than usual.

It is reported from Duluth that the Shenango Furnace Co. has acquired a 2 2/10 interest in Mahoning mine, one of the largest open pit mines on the Mesabi range, operated by Pickands, Mather & Co. for a number of interests. Crucible Steel Co. recently obtained a substantial interest in the Shenango, Webb and other mines of the Shenango company as reported in the Oct. 3 issue of IRON TRADE REVIEW.

Philip von Florchingen gave to the monks of the Abbey of Villers-Bettnach, in Lorraine, the right to mine ore on his lands in 1240.

Sheets

Miscellaneous Orders Reflect Better Than Seasonal Consumption—Motorcar Industry Lags

WHILE the automotive industry remains out of the market for sheets, other lines are consuming material at a rate better than their seasonal average, this accounting for the fact production is holding up to 75 to 80 per cent in the Pittsburgh district. Middle western mills are matching new orders with shipments. Prices of the ordinary grades are steady.

SHEET PRICES, PAGE 1125

Pittsburgh, Oct. 29.—Sheet business is holding to a better rate than indicated by the decidedly light purchases for automotive companies. Although demand from the sheet industry's largest customer shows practically no improvement, production holds at 75 to 80 per cent, due to buying by other consumers. Electrical sheets continue in good demand, while blue annealed retains most of its recent activity. Blue annealed backlogs range up to three weeks, but on other descriptions fairly prompt delivery can be effected. Sheet prices are unchanged. Black sheets continue 2.75c, Pittsburgh, with the only reports of lower figures emanating from the Detroit district where this grade rarely is sold as plain black material. Galvanized sheets generally are 3.50c, although occasional reports of 3.40c, due to the preferential to jobbers, are heard. Blue annealed is steady at 2.35c and 2.20c for sheets and plates, respectively. Automobile sheets are 4.00c.

New York, Oct. 29.—Sellers of galvanized sheets continue to get 3.50c, Pittsburgh, on the bulk of business. In few instances has 3.40c been done. Black sheets are unchanged at 2.75c, Pittsburgh, and blue annealed plates at 2.10c to 2.20c, with the lower figure representing the market to jobbers and preferential buyers. Blue annealed sheets are steady at 2.35c, Pittsburgh. Trading generally has been sluggish.

Philadelphia, Oct. 29.—Sheet demand continues considerably below the average that prevailed earlier in the year. Black sheets now are generally 2.75c, base, Pittsburgh, and galvanized 3.40c to 3.50c, with comparatively little new business. Blue annealed sheets are fairly firm at 2.20c and 2.35c, base, Pittsburgh. Mills have two weeks work ahead.

Youngstown, O., Oct. 29. — Sheet shipments from local mills show practically no decline. Backlogs, however, have disappeared. The volume of orders has receded, due to the automotive industry. Prices are steady, with blue annealed 2.35c; black 2.75c to 2.85c; galvanized 3.50c to 3.60c and full-finished 4.00c, base, Pittsburgh. District operations have receded slightly with 67 per cent of hot mill capacity engaged.

Cleveland, Oct. 29.—Tonnage orders for sheets are fair, demand for galvanized being the largest. Mills offer deliveries of black and galvanized in two to four weeks. Automotive tonnage still lags. October shipments will show considerable decline from September. Consumption by steel barrel manufacturers shows signs of picking up in November. Prices are steady.

Cincinnati, Oct. 29.—The delivery situation in district sheet mills is much improved, and fresh bookings during the past week caused a sharp upturn in mill schedules. Automobile makers have not re-entered the market. Prices are steady.

Chicago, Oct. 29.—Steel sheet tonnage is being booked at a fairly heavy rate, although backlogs are reduced. Blue annealed tonnage is being scheduled for rolling intervals in November, and for December. In general, mills are obtaining as much business as they are shipping. Operations are slightly lower at about 85 to 90 per cent. The price position on black and galvanized sheets is not as strong in the South and Southwest as desired by local sellers, but Chicago mills are retaining the recent quotations. Mill quotations are 2.95c to 3.05c for No. 24 black, and 3.60c to 3.70c for No. 24 galvanized. Blue annealed prices for No. 13 gage are 2.45c, Chicago district mills.

St. Louis, Oct. 29.—Demand for galvanized sheets in the South is brisk, and some improvement is noted in other localities, notably the winter wheat area. Blue annealed sheets continue in good demand. Prices are steady.

Inland Steel Co. Net Up for Quarter

Net income of the Inland Steel Co. for the September quarter was $3,158,967, after all charges, equal to $2.63 a share on 1,200,000 shares of no-par common stock.

This compares with net earnings of $2,089,439 or $1.74 a share for the corresponding period of 1928. Net for the second quarter was $3,126,909, equivalent to $2.60 a share on the outstanding common stock.

Earnings for the first nine months of this year show a large gain compared with the corresponding 1928 period. Net for the nine months was $9,293,118, equal to $7.74 a share on the common stock. This compares with $6,931,161 or $5.77 a share in the 1928 period.

Structural Shapes

Commercial Construction Makes Eastern Projects Dominant—13,200 Tons Let for Subways—Chicago Inquiry Expands

SUBWAYS in New York once again are forging to the front. One section awarded takes 13,200 tons. Two sections up for immediate action involve 19,100 tons more. Awards involving 1000 tons or more at a time are well sustained, particularly in the East where apartments, hospitals, schools and industrial expansion continue to account for a large tonnage. Bridge work is a feature in the West. One hospital let in Brooklyn, N. Y., takes 5850 tons. A 2500-ton station for Omaha, Nebr., was divided among three fabricators. The West makes a bid for attention with a 15,000-ton tower and building addition inquiry in Chicago; 7500 tons of bridge work in Oklahoma; a 4000-ton tower in St. Louis and a 3000-ton Y. M. C. A. structure in Chicago.

STRUCTURAL SHAPE PRICES, PAGE 1125

New York, Oct. 29.—A subway section calling for 13,200 tons has been placed with McClintic-Marshall Co. Bids are also in on two other sections, calling for close to 20,000 tons. Apartments continue to take a sizable tonnage in the east, while a hospital let in Brooklyn calls for 5850 tons. Demand for shapes shows little decline and pending business remains heavy. More bridge work is appearing. Prices show no change but reports of shading continue. Fabricating shops generally are operating close to capacity. October tonnage will show a gain over September in this territory.

Boston, Oct. 29.—The structural award situation improved measurably last week, with bridge work here accounting for 1050 tons. A warehouse at Providence, R. I., took 300 tons, and the West Concord, N. H., hospital required 200 tons.

Philadelphia, Oct. 29.—Shape demand is fair but continues to show a tendency to taper off. Prices usually range from 1.90c to 2.00c, base eastern mill, with lower prices applying on large tonnages.

Pittsburgh, Oct. 29.—Structural activity in this district fails to measure up to the pace set in the East, although local fabricators remain fairly well engaged for this period. Recent structural lettings include only a few items of more than 100 tons although there is a fair number of smaller orders. Specifications for plain material remain active but are off slightly from the rate a month ago. Plain material is 1.90c to 1.95c, Pittsburgh.

Buffalo, Oct. 29.—Bethlehem Steel Co. has awarded two contracts for fabricated shapes for grade crossing projects in this vicinity. One is the Getzville crossing of the Lehigh Valley railroad, the low bid of Bethlehem for material and erection being $13,440. The other was the Sheridan drive crossing for the same railroad at a bid of $26,666. The 900-ton contract for the new Attica, N. Y., prison has not yet been awarded.

Cleveland, Oct. 29.—Small jobs are still sufficiently numerous to enable a large number of fabricating shops to maintain practically full operations. Mills report that specifications for plain material active. Most of these carry a 1.95c, Pittsburgh, price with large tonnage users getting 1.90c. A station for the Big Four at Linndale, O., will take 100 tons or more and a similar tonnage is involved in a stock exchange addition for the top floor of the Union Trust building. Crowell & Little Construction Co., has the general contract for the Cleveland Orchester home building, 500 tons or more. Gilchrist Construction Co. is low on the Monticello junior high school, Cleveland Heights, O.

Chicago, Oct. 29.—Specifications for plain structural steel took a jump in the week just closed, due largely to the scheduling of some recent car orders. Both Chicago, Milwaukee, St. Paul & Pacific and Santa Fe cars are now on the books. Specifications were reported 25 to 35 per cent above recent weeks. Fresh building and bridge work includes 15,000 tons for the National Bank of the Republic building, in Chicago, which may be out for figures soon, about 3000 tons for a Y. M. C. A. building, 1400 tons for bridge work at Sturgeon Bay, Wis., highway bridges in Minnesota, and several industrial buildings. More than 20 inquiries, ranging from 100 to 500 tons, are before fabricators. Awards, however, are far behind those in the East. The base price is $1 a ton lower, as 2.00c to 2.05c, Chicago, govern current business.

Birmingham, Ala., Oct. 29.—Tonnage in hand and in sight warrants active operation of fabricating shops here. Specifications are being worked up in various sections of the South and fabricators maintain good shop and erecting forces. Ingalls Iron Woks Co. and Virginia Bridge & Iron Co. were awarded two jobs involving 1000 and 1425 tons, respectively. Tennessee Coal, Iron & Railroad Co. is in position to furnish steel promptly.

Awards Compared

	Tons
Awards this week	41,386
Awards last week	67,751
Awards two weeks ago	31,589
Awards this week in 1928	48,038
Average weekly awards, 1928	39,082
Average weekly awards, 1929	41,919
Average weekly awards, Oct.	42,695
Total awards to date, 1929	1,844,447
Total awards to date, 1928	1,709,172

CONTRACTS PLACED

13,200 tons, subway section 5, route 108, New York, to McClintic-Marshall Co.

5850 tons, Kings county hospital, Brooklyn, N. Y., to Harris Structural Steel Co.

4500 tons, Merrimac river bridge, Missouri Pacific railroad, St. Louis, to American Bridge Co. Previously reported to unstated fabricator.

2500 tons, Union Pacific station, Omaha, Nebr., 1500 tons for station building, to McClintic-Marshall Co.; 700 tons, train shed, to American Bridge Co.; and 300 tons, station concourse, to Paxton & Vierling Iron Works.

1500 tons, 17-story apartment, 780 Park avenue, New York, to Drier Iron Works.

1500 tons, office building, Flint, Mich., to Flint Structural Steel Co.

1425 tons, steam station, North Baton Rouge, La., to Virginia Bridge & Iron Co., through Stone & Webster Inc., engineer.

1350 tons, Sterling law school, Yale university, New Haven, Conn., to Levering & Garrigues Co.

1050 tons, Congress street bridge, Boston, to McClintic-Marshall Co.

1000 tons, plate mill, Gulf States Steel Co., Gadsden, Ala., to Ingalls Iron Works Co.

965 tons, plant, Fisher Body Co., Lansing, Mich., to Whitehead & Kales Co.

925 tons, building, Wieboldt Realty Trust Co., Chicago, to American Bridge Co., previously reported to unstated fabricator.

800 tons, plant, United States Rubber Co., Passaic, N. J., to American Bridge Co.

760 tons, building, Amsterdam avenue, New York, to Drier Iron Works.

700 tons, apartment, East 164th street, Gerard avenue to Walton avenue, New York, to Eschen & Oboler Iron Works Inc.

650 tons, field house, University of Wisconsin, Madison, Wis., to Mississippi Valley Structural Steel Co.

500 tons, Colorado river bridge, Wharton county, Tex., to Virginia Bridge & Iron Co., through Venable Moore, general contractor.

500 tons, transmission towers, Pennsylvania railroad to American Bridge Co.

480 tons, power house, Pennsylvania State college, State College, Pa., to Pittsburgh Bridge & Iron Works.

475 tons, office and loft building, 80 Nassau street, New York, to Kues Bros.

450 tons, plant, Allen Mfg. Co., Franklin, Tenn., to Nashville Bridge Co.

450 tons, marker supports, New York state, to Buffalo Steel Co.

430 tons, Publix theater building, Ft. Wayne, Ind., to unstated fabricator.

405 tons, building, 49 West Seventy-second street, New York to Drier Iron Works.

400 tons, powerhouse, North Bend, Oreg., to Minneapolis Steel & Machinery Co., through H. M. Byllesly & Co., Chicago.

350 tons, apartment, Philadelphia, to Robinson Iron & Steel Co.

300 tons, five 75-foot skew spans, Leviss river bridge, Big Sandy & Cumberland Railroad Co., to Virginia Bridge & Iron Co.

300 tons, plant, Hines Lumber Co., Burns, Oreg., to Minneapolis Steel & Machinery Co.

300 tons, warehouse, Providence, R. I., to James H. Tower Iron Works.

300 tons, repair building, Curtiss Flying Service, St. Louis, to McClintic-Marshall Co.

280 tons, buildings, Curtiss-Steinberg air field East St. Louis, Ill., to McClintic-Marshall Co.

275 tons, railroad bridge, Devon, W. Va., to Virginia Bridge & Iron Co.
250 tons, Woods-Chevrolet garage building, A. S. Klyce, Birmingham, Ala., to Virginia Bridge & Iron Co.
245 tons, West Spokane street bridge approach, Seattle, to Pacific Car & Foundry Co.
200 tons, hospital, West Concord, N. H., to F. P. Lyons & Co.
200 tons, ice cream plant, Pottsville, Pa., to Robinson Iron & Steel Co.
156 tons, apartment, Palo Alto, Calif., to McClintic-Marshall Co.
150 tons, highway bridge, Mohawk, N. Y., to American Bridge Co.
150 tons, building, Acme Steel Co., Glassmere, Pa., to McClintic-Marshall Co.
125 tons, courthouse, Springfield, Mass., to Harmann Steel Co.
125 tons, state highway bridge, Bedford county, Pa.; to McClintic-Marshall Co.
120 tons, building, Audio Vision Appliance Co., Camden, N. J., to Southern Steel Service Co.
120 tons, bridge, Illinois Central railroad, to American Bridge Co.
100 tons, building work for Chicago, North Shore & Milwaukee railroad, to unstated Milwaukee fabricator.
Unstated tonnage, two grade crossings, Getzville and Sheridan drive, Lehigh Valley railroad, near Buffalo, to Bethlehem Steel Co.

CONTRACTS PENDING

15,000 tons, tower and addition to building, National Bank of the Republic, Chicago.
12,300 tons, subway, section 10, route 107 New York. Bids in.
7500 tons, bridge work in Oklahoma.
6800 tons, subway, section 7, route 108. Bids in.
6500 tons, assembly plant, Ford Motor Co., Edgewater, N. J. Bids being tabulated; award to be made by Albert Kahn, Detroit, architect, later in the week.
5000 tons, apartment, San Remo Towers, Seventy-fourth and Seventy-fifth streets, New York.
4000 tons, Wenzlick tower, St. Louis.
3000 tons, Victor Lawson Memorial Y. M. C. A., North Dearborn street, Chicago.
2400 tons, Eleventh street viaduct, Tacoma, Wash. Bids received.
1400 tons, highway bridge, Sturgeon Bay, Wis., for Wisconsin highway commission.
1200 tons, branch building, *New York Times*, Third avenue and Pacific street, Brooklyn, N. Y. Bids due Oct. 30.
1100 tons, apartment, East Seventy-ninth street, New York.
1000 tons, Fourteenth avenue South bridge, Seattle; Puget Sound Bridge & Dredging Co. low bidder.
700 tons, building, *Akron Times*, Akron, O. Bids in.
600 tons, New Jersey state highway bridges.
600 tons, highway bridges, Minnesota.
600 tons, mechanical engineering building, University of Wisconsin, Madison, Wis.
500 tons, Falk chemical laboratory, University of Pittsburgh; Stone & Webster general contractor.
500 tons, railroad bridge over Savannah river, near Augusta, Ga.
500 tons or more, Cleveland Orchestra home building; general contract to Crowell & Little Construction Co.
500 tons, building for Johns-Manville Co., Waukegan, Ill.
415 tons, highway over-pass, Ford Motor Co., Edgewood, N. J.
400 tons, night school, Maywood, Ill.
370 tons, Dumas Bay bridge, King county, Wash. Bids. Nov. 12.
350 tons Pennsylvania state bridge. Bids being taken.
300 to 400 tons, Monticello junior high school, Cleveland Heights, O.; Gilchrist Construction Co. low bidder.
300 tons, New York state highway bridges.
290 tons, Taylor-Allderdice high school addition, Pittsburgh; general contract awarded to Williams & Haas.
109 tons, two bridges, Monterey, Calif. Bids received.
100 tons, or more, station, Big Four, Linndale, O.
100 tons, postoffice building, Oshkosh, Wis.
100 tons, alterations and adding one floor to Union Trust building, Cleveland.
Unstated tonnage, Sheriff Street Market, Cleveland, alteration and expansion.
Unstated tonnage, plant, Dill Mfg. Co., Cleveland; general contract to DeHamel Construction Co.
Unstated tonnage, plant addition, E. F. Hauserman Co., Grant avenue, Cleveland; project revived.
Unstated tonnage, $1,000,000 expansion program, Electric Auto-Lite Co., Toledo, O.

Concrete Bars

Chicago Active—Other Sections Grow Duller—Prices Show Weakness

CHICAGO reports more concrete bar inquiry than since early summer. Other district activity is beginning to partake of usual end-of-year quietness. Billet bar prices are irregular at Chicago and Buffalo also reports weakness. Jobs taking 800 to 940 tons each were awarded at Los Angeles, Chicago and Pittsburgh. Tacoma, Wash., has an 800-ton viaduct up.

REINFORCING BAR PRICES, PAGE 1125

Pittsburgh, Oct. 29.—Concrete reinforcing bars remain fairly active despite the completion of a number of building projects. Mill backlogs have been reduced moderately during recent weeks, and with the tapering off in inquiry the usual light activity is looked for during the ensuing months of the year. The local market has been enlivened by awards of 900 tons, including 800 tons for a building for McCann & Co. The market continues 2.30c, Pittsburgh, for cut lengths and 2.05c for stock lengths.

Boston, Oct. 29.—The only round tonnage awarded for concrete bars in the past week was 200 tons for a series of tunnels between buildings of Harvard university. This was awarded Concrete Steel Co. Otherwise, odd tonnages up to 75 tons at a time, aggregated about 200 tons.

Buffalo, Oct. 29.—Reinforcing bars have been subjected to further price pressure. As low as 2.265c, Buffalo, is quoted on tonnage shipped direct from steel works. A district producer took an order for 130 tons this week, part of the new Buffalo city hall inquiry. An inquiry is out for 100 tons for a new school project near here.

Cleveland, Oct. 29.—Awards and inquiries have been quiet of late but now several projects are up, involving at least 100 tons at a time. Included are the Film Exchange building, Cleveland, the Monticellor junior high school building, Cleveland Heights, O., and the Big Four station at Lindale, O. Prices are weak, some quotations having lately been uncovered below 1.90c, Pittsburgh base.

Chicago, Oct. 29.—More reinforcing bar inquiry of importance is out than since early summer. Three state hospital additions—Dunning, Elgin, and Lincoln, Ill.—will take about 1000 tons, and the Chicago sanitary district will purchase 500 to 600 tons through a contractor. Formal award of 940 tons for a Chicago department store is recorded. Billlet prices are irregular, bids containing minimum quotations of 2.15c.

Awards Compared

	Tons
Awards this week	3,341
Awards last week	9,850
Awards two weeks ago	4,416
Awards this week in 1928	8,729
Average weekly awards, 1928	6,189
Average weekly awards, 1929	6,842
Average weekly awards, Oct.	5,969
Total awards to date, 1928	296,801
Total awards to date, 1929	301,033

CONTRACTS PLACED

940 tons, store building, Wieboldt Department Stores, Chicago, to Concrete Steel Co., previously reported to unstated fabricator.
800 tons, store building and garage, McCann & Co., Pittsburgh, to Carlem Engineering Co.
800 tons, office building, Wilshire and La Brea avenue, Los Angeles, to Blue Diamond Co.
365 tons, West Spokane street bridge approach Seattle, to Pacific Coast Steel Co.
270 tons, building, Fifth Avenue Realty Co., Moline, Ill., to Concrete Steel Co.
200 tons, tunnels, Harvard university, Cambridge, Mass., to Concrete Steel Co.
150 tons, garage, Indiana & Michigan Electric railroad, South Bend, Ind., to Concrete Engineering Co.
130 tons, city hall caissons, Buffalo, to Buffalo Steel Co.
126 tons, building, Mundelein college, Mundelein, Ill., to American System of Reinforcing.
100 tons, hospital, Wilmington, Del., to McClintic-Marshall Co.
100 tons, building work, Chicago, North Shore & Milwaukee railroad, to unstated fabricator.
100 tons, Frawley-Clark warehouse, Portland, Oreg., to Mercer Steel Co.
100 tons, building, Milwaukee railroad, Milwaukee, to American System of Reinforcing.
100 tons, auditorium, H. J. Heinz Co., Pittsburgh, to Carlem Engineering Co.

CONTRACTS PENDING

1000 tons, state hospital additions, Dunning, Elgin and Lincoln, Ill. General contract to J. B. French Co.
800 tons, Eleventh street viaduct, Tacoma, Wash. Bids received.
600 tons, work for Chicago sanitary district commission, Chicago.
450 tons, Wenzlick tower building, Twelfth boulevard, St. Louis.
200 tons, addition, Atlantic National bank, Boston.
200 tons, Fourteenth avenue south bridge, Seattle. Bids received.
150 tons, Kings county hospital, Brooklyn, N. Y.
128 tons, San Luis Rey river bridge, Sacramento, Calif. Bids received.
110 tons, state highway bridge, Sturgeon Bay, Wis. Bids close Nov. 6.
100 tons, for Amherst school, Williamsville, N. Y., bids in.
100 tons, Film Exchange building, Cleveland. Bids in.
100 tons, Monticello junior high school, Cleveland Heights, O.; Gilchrist Construction Co. low bidder.
100 tons, Mausoleum, Whittier, Calif. Bids being received.
Unstated tonnage, Big Four station, Linndale, O.

The Market Section

Refractories

Repair Work Orders Gain But New Construction Drops

REFRACTORIES PRICES, PAGE 1126

Pittsburgh, Oct. 29. — Refractory business has declined during recent weeks, although business still is substantially ahead of the rate a year ago. Repair work by mills is active but purchases for new construction are smaller. Jones & Laughlin Steel Corp. is relining one of its Eliza furnaces and the National Tube Co. has awarded brick for relining furnaces at Lorain, O. Considerable refractory business is pending for steel plant construction under way and in prospect, including work for the National Tube Co. in this district, the Illinois Steel Co., and Bethlehem Steel Co. at Johnstown. Operations of refractory producers continue heavy, particularly in production of silica brick. Prices remain steady at $43 to $46 for first quality fire clay brick and $35 to $38 for second quality material. Silica brick continues $43, Pennsylvania.

Safety Work Saves Large Sum in Insurance

Having won the inter-plant contest of the Chicago Safety council for the best record in July, the Petibone Mulliken Co. is now setting out to make an even better mark in the prevention of accidents. For 45 days from July 1 the foundry company did not have a lost-time accident, though employing 850 men. The company, of which C. H. Eib is president, has its own physician, Dr. J. T. Degan, and carries its own casualty risk. By assuming this risk the company has cut its cost of insurance from $36,000 to $11,000 yearly.

Ceramists Plan Meeting

Seven simultaneous meetings will feature the thirty-second annual convention of the American Ceramic society, to be held at Royal York hotel, Toronto, Feb. 17-22. Subjects which these meetings will cover include art, enamel, glass, heavy clay products, refractories, terra cotta and white wares. Ross C. Purdy, 2525 North High street, Columbus, O., is secretary of the society.

Publishes Bridge Data

"The Superiority of the Steel Bridge" is the title of a 47-page illustrated booklet recently published by the American Institute of Steel Construction Inc., New York. The booklet cites the peculiar advantages of steel bridges with regard to beauty, strength, permanence, flexibility, movability and economy, and contains over 50 illustrations with pertinent data of steel bridges in various localities the world over.

Rails, Cars

November Will See More Cars Placed—Rails Active— 100 Locomotives Are Awarded

OCTOBER, with about 19,600 cars let, seems destined to be followed by an active November. Rock Island inquires for 5000 cars; Burlington issues 600-car inquiry and may ask for 2100 later. Pacific Fruit Express placed 400 refrigerator cars. One western road placed 4500 tons of rails, making more than 1,750,000 tons placed to date for 1930 requirements.

RAILROAD TRACK PRICES, PAGE 1126

Chicago, Oct. 29.—Heavy spring rail orders are being scheduled by western roads three to four months ahead of recent years. It is indicated that by mid-November the bulk of 1930 tonnage will be under contract. Tonnage entered in the week just closed comprised miscellaneous orders and 4500 tons for the Chicago, Indianapolis & Louisville, or a total of about 5000 tons. Chicago & North Western's inquiry for 45,000 to 50,000 tons has not been issued formally, and nothing definite is reported as to Illinois Central's rail inquiry. No outstanding track fastenings tonnage has been placed since the Pennsylvaia order for 12,000 tons, but important track fastenings inquiries are in prospect. Light rail business shows more activity but is still behind eastern tonnage, which has been increased by coal field demand. Rail mill operations in the Chicago district remain at about 80 per cent, but it is indicated operations will be speeded next month.

Bids will be received soon on 600 freight cars for Chicago, Burlington & Quincy, and 100 caboose car underframes for Chicago & North Western. Burlington recently authorized the purchase of 2700 cars, and additional inquiry is expected. Steel for the 400 refrigerator cars for Pacific Fruit Express will be rolled in the West, as these cars were awarded to Pacific Car & Foundry Co.

New York, Oct. 29.—Award of 100 locomotives by the Pennsylvania, 25 to its own shops, is outstanding in the eastern railway equipment market. Car buying again has turned sluggish, with little outstanding in the way of fresh inquiry.

Domestic freight car buying for the month now closing is in excess of 19,600 cars. This brings the total for the year to date to more than 90,100. Approximately 11,000 freight cars are actively pending, including the inquiry for 5000 cars just issued by Rock Island. Pending coach business is light.

Pittsburgh, Oct. 29.—Recent awards have removed practically all pending work in rails and fastenings from the market although additional business is looked for from several roads. Specifications for fastenings are off from the rate of 30 to 60 days ago but are seasonally active. Relaying rails show improved demand over the September rate, with the market for 60 to 90-pound rails continuing $24 to $29. Light rails are in steady but limited demand, with the market generally $36.

CAR ORDERS PLACED

Atchison, Topeka & Santa Fe, two gasoline-electric rail motor cars, to Pullman Car & Mfg. Corp.
Butler Bros., 15 air-dump cars, to Koppel Industrial Car & Equipment Co.
Chesapeake Beach, one combination passenger and baggage gasoline-electric rail motor car, to J. G. Brill Co.
Hudson Bay Mining & Smelting Co. Ltd., 22 air-dump cars, to Western Wheeled Scraper Co.
New York, Chicago & St. Louis, 10 caboose underframes to Canton Car Co.
Norfolk & Western, rebuilding of 470 all-steel gondola cars, to its Roanoke, Va., shops.
Pacific Fruit Express, 400 refrigerator cars, to Pacific Car & Foundry Co.
Uruguay State Railways, two combination passenger and baggage gasoline rail motor cars, to J. G. Brill Co.

LOCOMOTIVE ORDERS PLACED

Canton & Carthage, one locomotive to the American Locomotive Co.
New Orleans, Natalbany & Natchez, one locomotive to the American Locomotive Co.
Pennsylvania, 100 locomotives, 50 to Baldwin Locomotive Works, 25 to Lima Locomotive Works, and 25 to company's own Altoona, Pa., shops. It is understood Altoona, Pa., shops will build all of the 100 tenders.

RAIL ORDERS PLACED

Chicago, Indianapolis & Louisville, 4500 tons, to Illinois Steel Co.

CAR ORDERS PENDING

Atlantic Refining Co., six tank cars.
Chevrolet Motor Co., 20 gondolas.
New York, Chicago & St. Louis, 10 steel caboose underframes.
Republic Iron & Steel Co., eight steel butt cars.
Rock Island, 5000 cars, including 1500 steel underframe auto; 2000 box; 1000 gondolas; and 250 each stock and flat.
Wabash, three combination mail and baggage cars.

No Action on Columbia

New York, Oct. 29.—Directors of the United States Steel Corp. met last Thursday and today without taking action on the option to purchase the properties of the Columbia Steel Corp. on the Pacific coast.

An iron bell called the "saufang," which is said to date from 613 is now in the Wallfram museum in Cologne, Germany.

Wire

Sale Volume Slightly Under Last Year—Jobbers Buying Better—Prices Fairly Firm

RECESSION of wire sales in October was only 5 to 10 per cent from the total for September and slightly below the same month in 1928. Jobbers are taking larger tonnages in the face of smaller dealer sales. Nails are in slack demand but fencing is moving in larger volume. Nail prices are holding better, but adjustments are being made in some sections.

WIRE PRICES, PAGE 1126

Chicago, Oct. 29.—October sales of wire products fell below September by about 5 to 10 per cent, and were only slightly below October, 1928, net sales. Woven fencing orders in the week just closed were heavier than in recent weeks. Jobber orders for common wire products are slightly heavier, although dealer sales are light. Sentiment throughout the West and Northwest varies with localities, although jobbers are looking for fair business. Prices named by western wire producers are $1 a ton over the Pittsburgh-Cleveland base quotations, although the margin is narrowed in prices made for shipment from western Indiana.

Worcester, Mass., Oct. 29.—October bore out predictions that it would equal September in wire production but it is generally felt that November will see a decline. Mills are running at 85 per cent capacity. Rod production is holding steady, broken only by a short interruption for maintenance adjustments. Plain bright wire to dealers is quoted at 2.55c to 2.65c, Worcester.

New York, Oct. 29.—Nails are being quoted here at $2.45, Pittsburgh, with concessions of 5 cents in some cases. Bright plain wire is unchanged at 2.40c, Pittsburgh. Demand generally is slack.

Pittsburgh, Oct. 29.—Specifications for wire products approximate the September rate but fall below the activity of a year ago. Nails continue slow, although barbed wire and fencing material remain fairly active. Prices hold at the lower levels announced a week ago, with plain wire at 2.40c, Pittsburgh, and wire nails $2.40 to $2.50. The nail market is fairly well established in this district at the latter figures but current prices represent adjustments in other sections.

Cold Finished Steel

Lack of Automotive Buying Continues to Depress Market

COLD FINISHED PRICES, PAGE 1126

Pittsburgh, Oct. 29.—Cold finished steel bar producers await more active commitments from the automotive industry. Demand from other users is well sustained. Quiet in automotive buying is restricting total sales and promises of heavier releases during November are now the chief hope for improved activity before the end of the year. October shipments are at about the September rate and show little change from that of a year ago. Pressure against prices as yet has developed few quotations below the current 2.30c, Pittsburgh, market.

Coke Output Declines

Output of by-product coke in September was 4,413,011 net tons and of beehive coke 504,300 tons, making a total of 4,917,311 tons for the month, according to the United States bureau of mines. In August output of by-product coke was 4,642,785 tons and of beehive coke 561,800 tons, or a total of 5,204,585 tons. In September, 1928, output of by-product coke was 3,958,682 tons and of beehive 312,500 tons, or a total of 4,271,182 tons. Stocks of by-product coke at producers plants as of Oct. 1 totaled 2,201,508 tons, compared with 1,906,868 tons a year ago. It is estimated that in September by-product coke ovens consumed 6,369,000 tons of coal and beehive ovens 784,000 tons.

The Bohemian chronicler, Hajek, of Liboschan, mentions that iron works existed near Schasslau in 677.

Strip

Automotive Delay Continues to Restrict Production—Other Users Taking Normal Tonnages

LACK of specifications from automotive interests for strip steel continues to be the most important deterring influence in the market. Other consumers are taking steady tonnages, equal to their usual requirements at this season. This is giving producers their present operating rate of about 50 per cent of capacity. Sales efforts are meeting considerable resistance.

STRIP PRICES, PAGE 1126

Pittsburgh, Oct. 29.—Activity in the strip market still is restricted by lack of buying from automotive companies. Demand from most other consumers is in about the usual seasonal volume but lack of specifications from automotive buyers is reflected in the current 50 per cent operating rate. Occasional reports of lower prices are heard on cold strip and wider sizes of hot strip, but the market is firmer than the light demand would indicate. The market generally is 2.00c for hot strip to 6 inches, and 1.90c for sizes up to 24 inches. Cold-rolled strip is held at 2.75c, Pittsburgh, on most tonnage.

Chicago, Oct. 29.—Concessions of $1 a ton under the hot and cold rolled strip market are reported in this territory, but prices recently have not been tested in tonnage sales. Sales efforts are being met with price resistance from buyers, who see an advantage in the weakened position of sellers from a tonnage backlog standpoint. Short range buying characterizes both hot and cold rolled strip markets. Backlogs virtually are gone. Not much activity is expected until more active automotive specifications come in. Chicago quotations for narrower sizes of hot rolled strip are 2.10c, Chicago, instead of 2.10c to 2.20c, while the wider material is quoted at 2.00c. The Pittsburgh-Cleveland base is observed for cold rolled strip. Hot rolled operations are about 65 per cent, while cold mills are operating 50 to 60 per cent.

New York, Oct. 29.—Strip steel demand is sluggish, with cold-rolled unchanged at 2.75c, Pittsburgh, and hot-rolled at 1.90c to 2.00c, depending on width. Hot-rolled deliveries are two to three weeks and cold-rolled about three weeks.

Philadelphia, Oct. 29.—Strip steel demand is quiet. Business is insufficient to test prices.

Cleveland, Oct. 29.—Hot strip business is more extensive than cold, although both still are far from the tonnage levels enjoyed in third quarter. November is expected to develop much more attractive business than October, a poor month from all viewpoints. Mills claim that while 1.85c, Pittsburgh, may have been developed by some large users in the Michigan territory on some prompt shipment material, 1.90c is the minimum they are quoting on wide, with 2.00c applying on narrow. Nothing below 2.75c, Cleveland-Pittsburgh, has been uncovered here on cold.

Nonferrous Metals

Copper Prices Hold Unchanged Despite Light Demand—Lead and Zinc Quotations Drop Sharply—Tin Continues Easy

Prices of the Week, Cents a Pound

	Copper: Electro delivered	Copper: Lake delivered	Copper: Casting refinery	Straits Tin: New York Spot	Straits Tin: New York Futures	Lead New York	Lead East St. Louis	Zinc St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
Oct. 23	18.00	18.10	17.37½	41.80	42.62½	6.90	6.70	6.70	23.90	8.62½	35.00
Oct. 24	18.00	18.10	17.37½	42.00	42.65	6.90	6.70	6.70	23.90	8.70	35.00
Oct. 25	18.00	18.10	17.37½	41.50	41.87½	6.90	6.70	6.70	23.90	8.70	35.00
*Oct. 28	18.00	18.10	17.37½	40.87½	41.37½	6.90	6.70	6.65	23.90	8.75	35.00
Oct. 29	18.00	18.10	17.37½	40.80	41.37½	6.75	6.50	6.60	23.90	8.75	35.00

NEW YORK, Oct. 29.—Copper is the only nonferrous metal which has held at unchanged price levels this week. Lead was quoted down sharply 15 points in the New York market and 20 points, East St. Louis basis, on Tuesday. Zinc declined 10 points while tin prices continued weak under the influence of soft prices in London. Antimony prices displayed some strength on Monday but again were easy in a dull market on Tuesday.

Coloring the entire nonferrous metal market situation was the weak stock market. Three sensationally sharp breaks in security quotations, one on last Thursday and the second and third on Monday and Tuesday this week, added to the uncertainty of metal traders and caused them to hold off more persistently in placing new orders. Previously, trading in general had been light and reports of price shading had been heard in zinc.

Copper—Domestic demand has been very light this week and export sales have lagged. Some buying has been done every day for shipment abroad. Producers apparently are firm in their price positions despite nervousness caused by the stock market among both buyers and sellers. Domestic consumers have been covered on their November requirements for some time. A little more buying is expected for next month, however. Earlier reports of price shading in the outside market disappeared entirely the fore part of this week.

Zinc—Some sellers of prime western metal lowered their prices to 6.60c, East St. Louis, late Monday. By Tuesday, this lower quotation became general in the market and light trading was done at this figure. High grade zinc held unchanged at 8.00c delivered East, while brass special was quoted 6.70c, East St. Louis. Rumors of price shading previous to the decline had been heard. In London, zinc prices were at a new low level on Tuesday, well below New York parity.

Lead—A drop in London prices preceded a decline of 15 points in the American Smelting & Refining Co.'s contract price on Tuesday. On the East St. Louis basis, lead immediately was quoted at 6.50c. Although some business had been done daily previous to the cut in prices, sales lagged after sellers had lowered their quotations. Weakness in London and fall in stock prices here were large factors in the decline.

Tin—The market here has been very quiet this week with both buyers and sellers watching the trend in London and the securities situation in this country. Fluctuations in tin prices of late have been wide and buyers have hesitated to enter the market. The daily swing in London has been wider than in this country in most instances. Fundamentally, the tin market remains unchanged with output larger than consumption.

Aluminum—Prices continue unchanged with new demand reported light.—*Daily Metal Trade.*

Mill Products

Base price cents per pound f.o.b. mill, except where otherwise specified

SHEETS	
Yellow brass (high)	23.25
Copper, hot rolled	27.75
Lead, full sheets (cut ¼c more)	10.00
Zinc sheet (100-pound base)	$10.50
Zinc strip (100-pound base)	$9.50
Aluminum, flat sheets, up to 10 gage, 3 to 72 inches wide	31.30
SEAMLESS TUBE	
Yellow brass (high)	28.25
Copper	29.25
RODS	
Yellow brass (high, full turnings)	21.25
Naval brass	24.00
WIRE	
Copper	19.87½
Yellow brass (high)	23.75

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	12.00 to 12.50
Chicago	12.00 to 12.25
Cleveland	12.50 to 13.00
St. Louis	12.00 to 12.50
HEAVY YELLOW BRASS	
Cleveland	8.50 to 9.00
HEAVY COPPER AND WIRE	
New York	14.50 to 14.75
Boston	14.25 to 14.75
Chicago	13.50 to 14.00
Cleveland	14.00 to 14.50
St. Louis	11.50 to 12.00
RED BRASS BORINGS	
New York	11.00 to 11.50
YELLOW BRASS TUBING	
Cleveland	8.50 to 9.00
LIGHT COPPER	
New York	12.50 to 12.75
Chicago	12.25 to 12.50
Cleveland	12.50 to 13.00
St. Louis	11.50 to 12.00
LIGHT BRASS	
Boston	6.75 to 7.00
Chicago	7.25 to 7.50
Cleveland	7.00 to 7.50
St. Louis	7.00 to 7.50
ZINC	
New York	3.25 to 3.50
Cleveland	3.00 to 3.50
St. Louis	3.50
ALUMINUM	
Clippings, Cleveland	16.50 to 17.00
Borings, Cleveland	9.00 to 9.50
Cast, Cleveland	12.00 to 12.50
Cast, Boston	10.50 to 11.00
Cast, St. Louis	12.25 to 12.50

Secondary Metals

Remelt aluminum No. 12	17.00 to 17.50
Brass ingot, 85-5-5-5	16.00 to 16.25

Purchases Alloy Plant

The Midvale Co., Nicetown, Philadelphia, manufacturer of specialties, particularly forgings and bars, announces purchase of Chrome Alloy Products Inc., Conshohocken, Pa., and its definite entry into the field of high grade chrome and chrome nickel alloy castings. T. Holland Nelson has been retained as consulting engineer and in an advisory capacity to work out problems of construction which demand materials resistant to heat and corrosion.

There has recently been installed a battery of induction furnaces, enabling the company to furnish castings in any size required. The Midvale Co. has obtained the exclusive right to manufacture in the United States patented compositions of chrome and nickel with other alloys held by Commentry-Fourchambault et Decazeville of Paris, France, commonly known as ATV-1, ATV-2, ATV-3, AMF, BTG, etc. It is also licensed under patents to Sir Robert Hatfield to produce steel of the composition to the well-known grades Era ATV and Era HR.

Quicksilver Quiet, Steady

New, York, Oct. 29.—Quicksilver is quiet and unchanged at $124.50 to $125 a flask.

Coke By-Products

Per Gallon at Producers' Plant in Tank Lots

	Spot
Pure Benzol	$0.23
90 per cent benzol	0.23
Toluol	0.40
Solvent naphtha	0.30
Commercial xylol	0.30
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants	
Naphthalene flakes	0.04½ to 0.05½
Naphthalene balls	0.05½ to 0.06½
Per 100 Pounds Delivered	
Sulphate of ammonia	$2.15 to $2.25

Warehouse

October Better Than September in Few Cases — Sheets Active — Prices Holding Fairly Firm—Outdoor Work Slows Down

IMPROVEMENT over September was registered in October by several eastern jobbers. Many warehouses however, suffered a setback this past month but hope to recoupe during November. New York reports a flurry in galvanized sheets. Cincinnati says blue annealed sheets are active. Quotations in general are firm, considering the weaker mill tendencies.

New York—Leading jobbers report the month now closing has shown improvement over September. This gain, however, has not been as good as was generally expected in view of the season. A few jobbers report no gain and in some cases note an actual decrease. A recent market feature was a flurry in galvanized sheet demand. This, however, has had little influence on prices, which continue weak. Structurals move in good volume.

Philadelphia—Jobbers report that demand continues unchanged in volume. Prices are unchanged and fairly firm.

Pittsburgh—Slightly improved demand for plates and structural shapes is noted at warehouses. Bars generally are slow and cold rolled material and sheets have lost some of their former activity. Business is slightly improved over the early October rate but fails to measure up to conditions a year ago. Prices are fairly steady on heavier products but some grades of sheets are easy. Wire and nail prices reflect the recently lowered mill quotations.

Buffalo—Warehouses report sales of iron and steel in keeping with early October averages. Keen competition exists between warehouses and mills for the larger tonnages. Prices hold up well considering the weaker mill tendencies.

Cincinnati—Warehouse prices continue firm with business volume on a par with September billings. An upturn in demand for blue annealed sheets is noted. Bars and shapes are moving steadily.

St. Louis—While demand for iron and steel goods from warehouses lacks animation as a whole, certain items continue to move in good volume. Prices for the most part hold their own. Weather conditions militate against activity of some commodities. Outdoor construction work has slowed down. Car shops have placed larger orders for emergency lots of sheets, plates, etc.

Warehouse Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.30c
Chattanooga	3.25c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.00c
Ft. Worth	3.75c
Houston	3.00c
Los Angeles	3.30c
New York†††‡	3.25c
Philadelphia*	2.80c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.75c to 4.04c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.30c
Chattanooga	3.25c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.00c
Ft. Worth	3.75c
New York††	2.80c to 3.24c
Philadelphia*	2.80c
St. Louis	3.15c
Tulsa	3.75c to 4.04c

REINFORCING BARS

Baltimore	3.31c
Boston	3.265c to 3.50c
Buffalo	2.95c
Chattanooga	3.25c
Cincinnati	3.15c
Cleveland	2.25c to 2.44c
Detroit	2.30c to 3.00c
Ft. Worth	3.50c
Houston	3.00c
Los Angeles cl	2.40c
Los Angeles lcl	2.70c
New York	2.90c to 3.30c
Philadelphia	2.75c to 3.10c
Pittsburgh	2.90c to 3.175c
San Francisco cl.	2.30c
San Francisco lcl.	2.60c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.75c to 4.00c
Youngstown	2.30c to 2.60c

STRUCTURAL SHAPES

Baltimore	3.25c
Boston	3.365c
Buffalo	3.40c
Chattanooga	3.35c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.10c
Ft. Worth	4.00c
Houston	3.25c
Los Angeles	3.30c
New York†††‡	3.15c to 3.30c
Philadelphia*	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.14c

PLATES

Baltimore	3.25c
Boston	3.365c
Buffalo	3.40c
Chattanooga	3.35c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-in. and thicker	3.00c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Detroit, 3/16-in.	3.10c
Ft. Worth	4.00c
Houston	3.00c
Los Angeles	3.30c
New York‡‡	3.30c
Philadelphia*	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	2.75c to 4.14c

NO. 10 BLUE ANNEALED

Baltimore	3.60c
Boston 3/16-in.	3.915c
Buffalo	3.50c
Chattanooga	3.75c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.25c
Detroit	3.35c
Ft. Worth	4.50c
Houston	3.90c
Los Angeles	4.00c
New York‡‡	3.50c to 3.90c
Portland	3.75c
Philadelphia*†	3.25c
Pittsburgh**	3.35c to 3.45c
San Francisco	4.00c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.75c
Tulsa	4.20c to 4.34c

NO. 24 BLACK SHEETS

Baltimore*†	3.75c
Boston	4.85c
Buffalo	4.20c
Chicago	4.05c
Cincinnati	4.05c
Cleveland***	3.75c to 3.90c
Detroit	3.95c
Ft. Worth	4.70c
Los Angeles	4.90c
New York	3.90c to 4.00c
Philadelphia*†	4.10c
Pittsburgh**	3.85c
Portland	4.90c
San Francisco	5.00c
Seattle	5.00c
St. Louis	4.25c
St. Paul	3.89c
Tulsa	4.34c

NO. 24 GALVANIZED SHEETS

Baltimore*†	4.50c
Boston	5.60c
Buffalo	4.70c to 4.85c
Chicago	4.90c
Cincinnati	4.90c
Cleveland***	4.60c to 4.75c
Detroit	4.75c
Ft. Worth	5.50c
Houston	5.40c
Los Angeles	5.30c
New York	4.60c to 4.75c
Philadelphia*†	4.85c
Pittsburgh**	4.85c to 4.95c
Portland	5.50c
San Francisco	5.40c
Seattle	5.50c
St. Louis	5.10c
St. Paul	4.68c
Tulsa	5.10c to 5.35c

BANDS

Baltimore	4.00c
Boston	4.015c to 5.00c
Buffalo	3.65c
Chattanooga	3.45c
Chicago	3.20c
Cincinnati	3.50c
Cleveland	3.25c to 3.65c
Detroit 3/16-in. and lighter	3.30c
Ft. Worth	4.25c
Houston	3.65c
Los Angeles	4.15c
New York‡‡	3.75c
Philadelphia*	3.30c
Pittsburgh	3.25c
Portland	4.00c
San Francisco	3.75c
Seattle	4.00c
St. Paul	3.50c
Tulsa	4.50c to 4.69c

HOOPS

Baltimore	4.00c
Boston	5.50c to 6.00c
Buffalo	4.05c
Chicago	3.75c
Cincinnati	4.05c
Cleveland	3.25c to 3.65c
Detroit, No. 14 and lighter	3.80c
New York‡‡	4.25c
Philadelphia*	3.55c
Pittsburgh	4.25c
Seattle	5.00c
St. Paul	4.00c

COLD FINISHED STEEL

	Rounds, Falts, hexagons, squares	
Baltimore (c)	3.50c(a)	4.00c
Boston	3.55c	4.05c
Buffalo	3.95c	4.45c
Chattanooga*	3.85c	4.35c(d)
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.65c	4.15c
Detroit	3.85c	4.35c
Los Angeles (a)	4.50c	.....
New York	3.60c	4.10c
Philadelphia*	3.60c	4.10c
Pittsburgh	3.70c	4.20c
Portland (a)	4.50c	.....
San Fran. (a)	4.25c	.....
Seattle (a)	5.00c	.....
St. Paul (a)	3.85c	.....
Tulsa	4.64c	5.14c

(a) Rounds only; (d) Squares only.

COLD ROLLED STRIP

Boston, 0.100-inch, 500 pounds lots	5.30c
Buffalo	5.85c
Chicago (b)	6.10c
Cincinnati	7.15c
Cleveland (b)	5.95c
Detroit	5.80c
New York	5.15c
Philadelphia (c)	5.15c

(b) Net base, straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.

SWEDISH IRON AND STEEL
New York duty paid

Hollow drill steel	13.00c
Iron bars, round	6.10c
Iron bars, flats and squares	6.50c

*Plus quantity differentials. ‡‡Minus quantity differentials. ††Domestic bars. **Less than 25 sheets. *†50 or more bundles.
***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time

Pacific Coast

Lessened Activity Apparent — Pending Projects Promise Better Tonnage

CONSTRUCTION activities on the coast continue but at the moment few contracts are being closed. However, tonnages now under consideration form a large total and promise to give sufficient business to keep shops busy. Foundry operations are slack and stocks of pig iron and coke are sufficient for current needs. Prices are holding well except for an occasional shading.

Seattle, Oct. 23.—While awards of structurals and reinforcing in the Pacific Northwest totaled only about 1000 tons this week, general contracts were let involving more than 4000 tons of steel. The sub-awards will be announced within the next two weeks.

Pig Iron and Coke

Foundry operations are lagging and show less activity than a month ago. New work is lacking, due largely to unsatisfactory conditions in the logging and lumber industry. Generally speaking, plants are well stocked with iron and coke. Pig iron is being purchased in small lots as required. Several foundries have signed for their 1930 supply of Tyneside coke at $14, against a previous price of $13.25, the increase being due, it is said, to higher ocean freights.

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah foundry	25.00 to 26.00
*German	24.25
*Indian	25.00 to 26.00

*C.i.f. duty paid.

Bars, Plates and Shapes

Mill prices on plates, shapes and bars are reported unchanged at 2.35c although according to rumor plates seem to be slightly weaker but as far as known no tonnages have been placed under this figure. Reinforcing steel is steady at 2.30c.

Union Bridge Co. at $381,000 was awarded the contract for building a bridge at Bremerton involving 600 tons of shapes. Bids ranging from $471,463 for concrete construction to $564,810 for full steel construction were submitted for the East Eleventh street viaduct, Tacoma, involving about 2400 tons of steel. Puget Sound Bridge & Dredging Co. at $482,181 was low bidder for constructing the Fourteenth avenue south bridge, Seattle, calling for 1100 tons of shapes and 200 tons of reinforcing material. Steel sub-contracts on these three jobs wil be awarded within a short time.

Local steel mills report less inquiry for reinforcing although both plants are still busy with pending orders. Pacific Coast Steel Co. booked 365 tons for the West Spokane street bridge approach, Seattle, while the Mercer Steel Co. took about 100 tons for the Frawley-Clark warehouse at Portland. No important new projects calling for reinforcing bars have developed.

No important plate awards were announced this week but a heavy tonnage is pending at Port Angeles for a large pipe line and bids for an additional contract involving 1400 tons at Everett will be opened this week.

Structural awards of the week include 245 tons for the approach to the Spokane street bridge at Seattle, taken by the Pacific Car & Foundry Co. Wallace Bridge & Structural Steel Co. obtained a small contract at Burns, Oreg. for the new lumber plant of the Hines Lumber Co. Minneapolis Steel & Machinery Co. is reported to have taken most of the shapes award on this job, said to be about 300 tons. Byllesby & Co., Chicago, are reported to have been awarded the general contract for a power plant at North Bend, Oreg., said to involve about 400 tons of structurals. King county, Wash., will open bids Nov. 12 for the Dumas Bay bridge, requiring 370 tons of shapes and 45 tons of reinforcing.

Finished Materials

Wholesalers are operating on unchanged price schedules although mill prices seem somewhat weaker in the East. Sheets appear to be somewhat unsteady but there is not much interest in this item here. The jobbing business is fairly active, on a par with September. Warehouse buying continues in satisfactory volume.

Old Materials

Steel scrap remains unchanged at $10 and $11, gross, at local plants which are receiving ample supplies for present needs. Exporters are active at Vancouver, B. C., and Portland, purchasing desirable tonnages and taking advantage of low water freights to Japan. Competition is rather keen. Cast iron scrap is nominally $13 net ton. Heavier receipts from the country are reported offsetting the firmer ideas of town dealers. Foundries are buying only in small lots as their present requirement are restricted.

California Buying Light

San Francisco, Oct. 26.—(*By Air Mail*)—While awards of iron and steel products this week were not particularly heavy, business booked compared favorably with the weekly average for the year. Important lettings included 1100 tons of shapes for the Los Angeles Stock Exchange building, placed with the Consolidated Steel Corp., and 800 tons of reinforcing bars for an office building in Los Angeles, secured by the Blue Diamond Co.

Pig Iron and Coke

Movement of foundry pig iron and foundry coke continues limited to unimportant lots and few inquiries of moment have come into the market during the past few weeks. No change in quotations is noted.

Bars, Plates and Shapes

Awards of reinforcing steel bars this week aggregated 1585 tons, compared with the weekly average for the year of 1599 tons. Pending business calls for approximately 4000 tons. Most inquiries call for lots of 20 to 40 tons. Prices on out-of-stock material in the San Francisco district continue at 2.30c, base, on carload lots with 2.60c, applying on smaller tonnages. Los Angeles warehouse prices are $2 a ton higher. Merchant bar steel continues to move in small lots only. On this class of material 2.35c, c.i.f. appears firm.

Little of importance transpired this week in the plate market. With one exception, awards were confined to lots of less than 100 tons. Prices are nominal at 2.35c, c.i.f. on small lots, this price having been shaded by $1 and $2 a ton on desirable lots.

Fabricators of structural steel in the southern part of the state are booked well in advance and a fair volume of new work is in sight. Most awards this week were confined to lots of less than 100 tons. McClintic-Marshall Co. took 156 tons for an apartment in Palo Alto, Calif., and the Minneapolis Steel & Machinery Co. booked 400 tons for a power house at North Bend, Oreg. Pending business now exceeds 10,000 tons. Plain structural material continues firm at 2.35c, c.i.f.

Other Finished Material

Bids were opened this week on 287 tons of class 150 pipe for the University of California, Berkeley, to be delivered at Redwood City. The only new inquiry of importance that came up for figures during the week, involved 449 tons for the improvement of Dana Point, Santa Ana, Calif., bids on which will be opened Nov. 5. Los Angeles opened bids this week on 243 tons. No large pipe line inquiries are up for figures.

Bids will be opened on Nov. 13 for furnishing three electrically operated revolving hammer-head cranes with a capacity of 5 tons at a radius of 95 feet for the Mare Island navy yard.

Plate Mill Under Way

Birmingham, Ala., Oct. 29.—Foundations are practically in and fabrication of and erection of steel for the new plate mill for the Gulf States Steel Co. at Gadden, Ala., will be under way shortly. The Ingalls Iron Works Co., is fabricating 1000 tons of steel for this mill.

Steel Corp. Declares Extra of $1; Third Quarter Earnings Are Off

NEW YORK, Oct, 29.—United States Steel Corp. third quarter report of earnings was accompanied by announcement of an extra dividend of $1 a share on the common stock. Earnings for the period were $70,173,713, only a little short of those for the second quarter and comparing with $52,148,476 in the corresponding period of 1928.

After depreciation and other charges the net was $51,575,350, compared with $29,886,252 in the third quarter of 1928. The net was equivalent to $5.62 a share on 8,050,304 shares against $3.31 a share on the 7,116,-325 shares outstanding one year ago.

The record of earnings by months showed some decline in September compared with preceding months, but the figure for that month was well above one year ago. August made the best showing for the period with earnings of $24,687,078, against $18,597,178 one year before. The corporation income account follows:

	3rd quar. 1929	2nd quar. 1929	3rd quar. 1928
Total earnings	$70,173,713	71,995,461	52,148,476
Depletion, deprec., etc.	16,819,393	15,919,386	17,775,018
Net income	53,354,320	56,076,075	34,373,458
Bond interest	1,778,970	2,250,232	4,487,199
Balance	51,575,350	58,825,843	29,886,259
Pref. dividend	6,304,919	6,304,919	6,304,919
Com. dividends	22,360,984	14,053,032	12,453,411
Surplus	22,909,447	33,467,892	11,127,929

Earnings for the first nine months of 1929 were $147,586,640, compared with $77,086,888 after depreciation and other charges. Net per share on common stock was $15.82 against $8.17 one year ago, The comparative nine months income account follows:

	First Nine Months 1929	First Nine Months 1928
Total earnings	$202,274,555	140,015,494
Depletion, deprec., etc.	47,455,607	49,305,996
Net income	154,818,948	90,709,498
Bond interest	7,232,308	13,622,610
Balance	147,586,640	77,086,888
Preferred dividends	18,914,757	18,914,757
Common dividends	48,867,427	37,360,233
Surplus	79,804,456	20,811,898

Steel Founders' Society Plans Reorganization

Chicago, Oct. 29.—A comprehensive report with recommendations, outlining a new form of organization, based on co-operative effort in the steel foundry industry, was presented before sessions of the Steel Founders' Society of America at the Hotel Sherman today. The report as presented by Granville P. Rogers, managing director, authorized a program of merchandising, research, publicity and education for steel castings. It emphasized the wider use of alloy castings. The organization is to be divided into geographical divisions. J. E. McCauley of the Birdsboro Steel Foundry & Machine Co. Birdsboro, Pa., was elected president.

Rivers and Harbors Body Will Convene

Official call has been issued for the twenty-fifth convention of the National Rivers and Harbors Congress. The meeting this year will be held at the Willard hotel, Washington, Dec. 10-11. It is expected that delegates to the convention will join in advocating prompt governmental completion of all adopted waterway projects and an increase in annual appropriations by congress for river and harbor improvements. Steps will be taken to determine some means of convincing legislative officials of the value of a Rivers and Harbors bill, one of which recently was rejected by congress. Introduction of a new bill, calling for the appropriation of nearly $100,000,000, will be sought.

Export Rates Lowered

Freight rates on manufactured iron and steel products shipped from Atlanta to the ports of Savannah, Ga., and Brunswick, Ga., have been considerably reduced by a decision of the Georgia public service commission, it has been announced by James A. Perry, chairman of the commission. The decision is of importance to manufacturers of machinery and parts and various iron and steel products in Atlanta and the vicinity, as that most of the export business on such products is shipped by way of Savannah or Brunswick. The new rates, Mr. Perry states, are effective Friday, Nov. 15.

Elects Vice President

Superior Steel Corp., Pittsburgh, has elected William L. Woodward vice-president. He is a graduate of Massachusetts Institute of Technology and was formerly manager of the Standard Welding Co., Cleveland.

Outlook for Tariff Legislation Is Darker as Senate Leaders Depart

WASHINGTON, Oct. 29.—Senator Watson, majority leader for the Republicans in the senate, has thrown up the sponge in the tariff fight and is leaving Washington Thursday for an indefinite stay in Florida.

Senator Robinson, of Arkansas, minority leader of the senate, is leaving for a three-week absence. In the meantime Senator McNary, of Oregon, has been designated majority leader ad interim and will make an effort to get some support for the tariff bill.

Increasingly it is the opinion here that if the tariff bill is not passed at the special session ending Dec. 1 it is dead. Senate leaders are urging President Hoover to step into the breach and make some kind of a declaration to save the measure. Thus far he has not made such a move, and the outlook for tariff legislation is dark.

Six weeks have been consumed by the senate in considering administrative features of the bill. It stands now with the flexible provisions omitted and the farm debenture plan inserted, both of which are inacceptable to the President.

Senator Copeland, of New York, has introduced two amendments to the pig iron section of the bill.

One of these amendments would strike out the words in that paragraph "72 cents per pound on the tungsten content in excess of two-tenths of 1 per centum," while the other would strike out the whole latter part of the paragraph so that if his amendments should carry that paragraph would read;

Par. 301. Iron in pigs and iron kentledge, $1.50 per ton; spiegeleisen containing more than 1 per centum carbon, $1 per ton; granular or sponge iron, $2 per ton; wrought and cast scrap iron, scrap steel, hammer scale, roll scale, and mill scale, 75 cents per ton; Provided, That spiegeleisen for the purpose of this Act shall be an iron manganese alloy containing less than 30 per centum manganese; Provided further, That nothing shall be deemed scrap iron or scrap steel except secondhand or waste or refuse iron or steel fit only to be manufactured.

Leading Steel Common Stocks Off Billion Dollars from Year's High

IN THE slaughter of stock market values of the past week, steel company shares have suffered with other leading issues. Taking the closing prices of Tuesday, Oct. 29, the aggregate valuation of 11 steel company common stocks listed on the New York Stock exchange showed a decline, from the 1929 high mark, of $1,133,587,416.

These companies represent 75 per cent of the steel ingot making capacity of the country. The slump in values from the year's peaks ranged from 19 points for Central Alloy Steel Corp. to 87 points for the United States Steel Corp. The Republic Iron & Steel Co. with a decline of 74 points from its high mark ranked second to the Steel corporation in the amonut of its decline. The American Rolling Mill Co. with a drop of 68 points was the third most hard hit by the speculative reaction.

Reckoning the drop in percentages, it is found that the United States Steel Corp. lost only 33 per cent from its high point of 261 for the year. The Youngstown Sheet & Tube Co. showed a percentage loss of only 23 per cent, the smallest of the group. Other percentage declines were: Republic Iron & Steel Co., 50; American Rolling Mill Co., 47; Superior Steel Corp., 64; Inland Steel Co., 37; Bethlehem Steel Corp., 40; and Central Alloy Steel Corp., 32.

In the great 1929 bull market in stocks steel issues were tossed upward to great heights. The emergence of the iron and steel industry from its long midnight of low earnings to a period of impressively increasing profits seized upon speculative imagination. Prices of leading steel issues were bid up in line with the new earnings levels and many of them soared somewhat above. However, there has been no such wild speculative upbidding of steel shares as has been the case for many other issues such as the utilities.

In the main, steel company shares even at their highs have been averaging from 10 to 15 times earnings, a conservative earnings ratio under conditions recently existing. When the hurricane of liquidation came, however, stocks were dumped indiscriminately and it is quite likely that the pendulum will swing as far below a proper level as it swung above some weeks ago.

Some recession in steel share prices was inevitable in view of the present slackening of operations, largely due to falling off of automobile company demand. Nevertheless, the final result of the year will undoubtedly prove to be record breaking in point of production and, for many companies, in point of profits as well. The violent slump in stock prices of the steel industry is no real measure of the slackening process now going on, nor does it presage any such drastic decline in business. The real meaning of the marking down of quotations is the correction and culmination of a speculative spree and the bringing of the speculative situation in line with the realities of credit and business.

How Steel Common Stock Quotations Have Declined

	High For 1929	Close Oct. 26 1929	Loss Per Share	Per centage Decline	Total Com. Shares outstanding	Dec. in total Com. Stock from High
United States Steel Corp.	$261	$174	$87	33	8,046,043	$700,005,741
Bethlehem Steel Corp.	140	84	56	40	2,402,899	134,562,344
Youngstown Sheet & Tube Co.	143	110	33	23	988,000	32,604,000
Republic Iron & Steel Co.	146	72	74	50	860,000	63,640,000
Inland Steel Co.	113	80	30	37	1,200,000	36,000,000
American Rolling Mill Co.	144	76	68	47	1,351,342	92,891,256
Central Alloy Steel Corp.	59	40	19	32	1,320,625	25,191,875
Otis Steel Co.	55	34	21	38	840,000	17,640,000
Superior Steel Corp.	73	27	46	64	115,000	5,290,000
Colorado Fuel & Iron Co.	78	35	43	55	342,355	14,706,000
Ludlum Steel Co.	109	44	65	59	170,000	11,050,000
Total	.....	.....	.....	....	.....	1,133,587,416

Issues Safety Booklet

Mine Safety Appliances Co., Pittsburgh, has issued a folder entitled "Practical Aspects of Resuscitation," by Edward Steidle, dean, School of Mines and Metallurgy, Pennsylvania State college, State College, Pa. The booklet gives a short discussion on respiration and describes the functions of the respiratory organs. Asphyxiation from various causes is discussed, with artificial respiration, its history, and the Schaefer and Sylvester methods. The latter part of the booklet is devoted to descriptions of apparatus for aiding in resuscitation.

Mexican Steel Output Grows Steadily

Gross earnings of the Monterrey Iron & Steel Co., the largest enterprise of its kind in Mexico, for 1928 were 11,300,407.58 pesos ($5,650,203.79), shown by the concern's annual report. This income was 1,125,840.38 pesos greater than that for the previous year. Net profit was 720,807.74 pesos ($360,403.87) whereas that for 1927 was only 625,076. Last year was the best period the enterprise has had since 1925, when the net profits were 742,958.93 pesos and the second best year since the 1,134,360.32 pesos net earnings registered in 1922. This concern is capitalized for 10,000,000 pesos ($5,000,000).

The 1928 production was 79,433 tons, against 64,440 tons in 1927.

According to the report Mexico consumed 183,706 tons of iron and steel products last year. Of this, 112,790 tons were imported, 65,916 domestically sold by the company and about 5000 tons by other Mexican manufacturers. Most of the iron and steel importations by Mexico are from the United States. Although last year's imports in this respect showed an increase over the previous 12 months, they were far below those for 1926, 138,873 tons, which was the best year in this regard since 1912, when iron and steel importations totaled 171,417 tons.

New Officers Selected

New officers were elected to the American Association of Engineers at the fall meeting of the board of directors of the association in the Brevoort hotel, Chicago, Oct. 11 and 12. The new officials are: President, H. A. Wagner, consulting mining and metallurgical engineer, Mayer, Ariz., and New York; vice president, James H. Griffin, civil engineer, New York; treasurer, H. W. Clausen, president of Chicago Association of Credit Men, Chicago. M. E. McIver, 8 South Michigan boulevard, Chicago, was re-elected secretary.

September Exports, Imports Down

Iron and Steel Shipments Low for Year—Shapes and Steel Bars Up—Canada Takes All of Iron Ore, With Decline In Receipts

FOLLOWING the trend of the past two months, the export trade of the United States in iron and steel products continued to decline during September and established a new low record for the year, amounting to 222,408 gross tons, compared to the monthly average of 258,626 tons established over the first nine months of the year. Imports reacted sharply from the year's record purchases established last month, decreasing approximately 25 per cent to reach a total of 60,974 tons received during September, according to the iron and steel division of the department of commerce.

The drop in exports brought the daily average shipments for September down to 7414 tons, August shipments having averaged 8734 tons. The daily average imports were also lower, decreasing to 2032 tons, compared with 2709 tons in August.

Shipments of scrap, which are unusually erratic, were 30,054 tons under the August shipments. Other products which showed decreases were black steel sheets, casing and oil line pipe, rails, skelp, and fabricated shapes. In contradistinction to the general trend of the trade, shipments of plain shapes, steel bars, cast iron soil pipe and galvanized sheets increased.

Scrap was, in point of tonnage, the principal commodity shipped abroad during September and went principally to Japan, Canada, Italy and Poland. Shipments of plain shapes during the month totaled 21,187 tons, of which amount Canada took 17,294 tons and Japan 1904 tons. Tin plate, the third largest item, went principally to China, Canada and Japan, while steel bars found a fair market in Canada, Japan and the United Kingdom. Japan, the United Kingdom and Canada were also large purchasers of welded pipe.

For the third consecutive month Belgium maintained her position as the chief source of ferrous products imported by the United States. Her shipments amounting to 13,238 tons, as compared to 18,131 tons in August.

Canada was the second with 12,917 tons. Other countries participating in this trade were Germany 10,933 tons, France 8756 tons, British India 6485 tons, the United Kingdom 3791 tons, and Sweden 3063 tons.

Receipts of iron ore declined to 246,917 tons from 298,013 tons in August. Almost half of the ore was received from Chile (114,930 tons), while Cuba (47,000 tons) and Sweden (28,463 tons) were other important contributors. The trade in manganese concentrates showed a similar tendency, falling from 32,943 tons in August to 13,123 tons for September.

Exports of iron ore increased from 158,955 tons shipped in August to

IMPORTS AND EXPORTS

Gross Tons

	—1929—		—1928—	
	Imports	Exports	Imports	Exports
Jan.	54,793	274,296	58,635	205,766
Feb.	58,146	259,711	48,756	185,907
March	52,622	270,925	74,128	221,935
April	54,337	277,580	71,579	215,184
May	74,272	261,516	72,106	267,890
June	63,635	247,811	65,819	262,052
July	71,378	270,532	47,830	253,336
Aug.	83,969	242,856	69,914	287,297
Sept.	60,974	222,408	57,782	228,056
9 mos.	574,166	2,327,635	581,609	2,126,120
Oct.	.....	.....	63,880	256,870
Nov.	.....	.....	67,103	256,886
Dec.	.....	.....	55,199	221,810
Total	.....	.....	782,694	2,862,997

ORIGIN OF IMPORTS

Gross Tons

	Ingots blooms, etc.	Steel scrap	Cast iron pipe	Steel bars
Belgium	1,235	.....	68	1,116
France	700	.....	3,222	695
United Kingdom	8	.....	.....	159
Netherlands	.....	.....	.....	1
Sweden	146	.....	.....	1,313
Germany	254	.....	180	324
Canada	17	5,923	.....	5
Dominican Republic	.....	24	.....	.....
	2,360	6,399	3,478	3,693

ORIGIN OF PIG IRON IMPORTS

Gross Tons

	Sept.	August
Mexico	30	65
Netherlands	693	737
Norway	420	101
Sweden	25	106
United Kingdom	651	3,903
Canada	2,709	238
British India	6,485	7,227
Total	11,013	12,337

ORIGIN OF IRON ORE IMPORTS

Gross Tons

	Sept.	August
Spain	6,028	.....
United Kingdom	.....	401
Canada	43	764
Cuba	47,000	51,000
Chile	.....	170,756
Algeria and Tunis	13,320	18,815
Sweden	28,463	44,897
Newfoundland	11,330	11,380
Brazil	7,700	.....
Colombia	114,930	.....
British India	4,000	.....
Australia	6,303	.....
Egypt	7,800	.....
Total	246,917	298,013

ORIGIN OF MANGANESE IMPORTS

Gross Tons

From	Sept.	August
Soviet Russia in Europe	7,200	24,843
Canada	45	.....
Brazil	839	5,696
Chile	.....	884
British India	2,600	1,520
British W. Africa	2,439	.....
Total	13,123	32,943

ORIGIN OF FERROMANGANESE IMPORTS

Gross Tons

	Sept.	August
France	47	68
Italy	198	184
Norway	.....	4,378
United Kingdom	312	1,509
Canada	1,968	2,357
Total	2,525	8,496

IMPORTS OF IRON AND STEEL PRODUCTS

(In gross tons)

Item	Sept. 1929	Aug. 1929	January thru Sept. 1929	1928
Pig Iron	11,013	12,377	103,594	104,777
Ferromanganese and alloys (1)	2,525	8,496	48,818	34,677
Ferrosilicon (2)	966	1,124	7,306	2,582
Ferrochrome (3)	48	92	522	569
Scrap	6,399	12,033	70,806	37,653
Steel ingots, blooms, billets, etc	2,360	2,639	20,901	16,619
Steel bars	3,693	3,778	28,952	70,966
Iron bars	161	175	2,446	1,614
Wire rods	1,401	1,369	12,608	12,130
Hoops, bands & scrolls	5,580	7,225	34,253	39,840
Boiler and other plate	215	362	3,033	4,668
Sheets, skelp and sawplate	2,771	3,090	19,109	19,912
Tin plate	29	35	237	817
Structural shapes	15,525	15,695	118,574	131,325
Rails and splice bars	258	1,517	5,902	12,982
Cast iron pipe	3,478	8,397	44,532	47,314
Other pipe and tubes	2,470	2,866	30,584	31,513
Barbed wire	217	727	4,486	3,121
Round iron and steel wire	551	322	4,629	3,230
Steel telegraph and telephone wire	11	3	14	168
Flat wire and strip steel	199	224	1,663	1,780
Wire rope and strand	93	175	1,779	1,255
Other wire	17	19	402	451
Nails, tacks and staples	857	993	7,190	7,122
Bolts, nuts, rivets and washers	47	62	274	176
Castings and forgings	90	174	1,552	2,315
Total	60,974	83,969	574,166	589,576

(1) Manganese content (2) Silicon content
(3) Chromium content

300,388 tons in September, the entire trade being with Canada.

Imports during the month totaled 60,974 gross tons, a decrease of almost 25 per cent from the 83,969 tons of ferrous products purchased from foreign sources during August.

Structural shapes was, in point of tonnage, the most important item purchased abroad, amounting to 15,525 tons. Next in importance was the purchases of pig iron. Scrap imports originated almost entirely in Canada. Germany and Belgium shared the major portion of the trade in hoops and bands, while Belgium and Sweden were the main participants in that of steel bars.

North and Central America maintained its position as the principal foreign market for American ferrous products during the month, followed in order by the Far East, South America, Europe and Africa. As is usually so, Canada took the largest tonnage of any country.

DESTINATION OF SEPTEMBER IRON AND STEEL EXPORTS

(In Gross tons)

	Rails	Galvanized Sheets	Plates not Fab.	Tin terne plates	Black sheets	Barbed wire	Steel Bars	Scrap
Argentina	.....	433	22	1,593	754	745	.....	.....
Australia	.....	59	5	.....	369	20	110	.....
Brazil	1,623	1,488	6	176	.....	664	187	.....
Canada	1,842	1,611	10,589	4,337	5,391	245	6,350	9,961
Central America	299	553	13	.....	16	338	47	.....
Chile	110	88	102	220	.....	.....	.....	.....
China	.....	547	.....	4,537	.....	.....	103	261
Colombia	96	291	.....	181	.....	210	.....	.....
Cuba	686	712	52	225	122	602	294	.....
France	.....	.....	.....	.....	537	.....	.....	.....
Italy	.....	.....	.....	205	.....	.....	.....	7,532
Japan	2,117	316	.....	3,566	1,556	.....	3,490	10,891
Mexico	710	2,180	27	859	171	639	219	421
Philippines	97	2,748	.....	1,004	20	834	753	.....
Peru	2,141	.....	5	611	1,718	.....	510	.....
United Kingdom	.....	.....	.....	.....	323	.....	3,029	59

Miscellaneous: Steel scrap, Poland, 3000; Kwantung, 450. Barbed wire, British South Africa, 340. Steel bars, Europe, 41; Panama, 1143. Black sheets, Europe, 176. Plates, Europe, 3; Java, 166; Dutch West Indies, 170. Galvanized sheets, Norway, 103; Other Europe, 182; British India, 90; Dutch East Indies, 941; British South Africa, 101; Finland, 182; British Malaya, 203; Java, 178. Tin, terne plate, Europe, 13; Dutch West Indies, 60; Uruguay, 330; Java and Madura, 29; Greece, 222; Hongkong, 508; Turkey, 462.

TOTAL	10,070	13,454	11,587	19,910	11,822	5,263	16,999	32,803

EXPORTS OF IRON AND STEEL PRODUCTS FROM THE UNITED STATES

(In gross tons)

Item	Sept. 1929	Aug. 1929	January thru Sept. 1929	January thru Sept. 1928
Pig iron, not including ferro-alloys	1,806	2,251	42,624	52,559
Ferromanganese and spiegeleisen	98	204	1,355	7,292
Scrap	32,803	62,857	392,398	424,112
Ingots, blooms, etc.	2,450	3,407	32,144	19,110
Skelp	12,136	14,962	94,869	87,225
Iron bars	192	118	3,231	2,947
Steel bars	16,999	11,936	158,738	108,865
Alloy steel bars	395	449	12,791	11,107
Wire rods	2,247	2,969	34,098	29,111
Plates	12,868	13,924	153,763	109,562
Galvanized sheets	13,454	11,336	125,364	112,748
Black steel sheets	11,822	15,890	138,734	140,518
Black iron sheets	1,313	1,664	12,050	11,425
Hoops, bands, and strip steel	4,509	4,785	56,886	42,054
Tin plate, terne-plate, etc.	19,910	21,367	194,273	185,472
Structural shapes, plain material	21,187	5,278	202,277	132,116
Structural shapes, fabricated	10,170	12,647	87,880	65,405
Metal lath	334	378	4,316	3,940
Steel rails	10,070	12,926	118,561	160,668
Rail fastenings, switches, frogs, etc.	1,704	2,851	24,704	34,277
Boiler tubes	1,761	1,384	14,451	13,116
Casing and oil line pipe	6,540	9,884	95,845	86,517
Black and galvanized welded pipe	13,482	11,497	108,643	86,389
Malleable iron screwed pipe fittings	784	833	8,978	7,316
Cast iron screwed pipe fittings	1,893	784	10,365	4,663
Cast iron pressure pipe and fittings	1,930	443	8,852	8,336
Cast iron soil pipe and fittings	3,170	508	10,455	12,020
Plain wire	3,347	2,994	36,069	34,859
Barbed wire and woven wire fencing	5,548	4,001	50,932	54,091
Wire cloth and screening	156	148	1,341	1,401
Wire rope	437	576	5,671	3,851
Insulated wire and cable	113	39	802	423
Other wire and manufactures of	625	962	8,636	6,731
Wire nails	813	733	10,756	11,728
Nails other than wire	778	821	7,567	6,742
Tacks	60	51	525	567
Horseshoes	35	32	287	340
Bolts, nuts, rivets, except track	1,483	1,589	12,431	9,716
Car wheels and axles	1,250	1,104	16,466	12,391
Iron castings	582	442	9,004	8,901
Steel castings	671	868	8,804	7,223
Forgings	483	964	9,699	8,228
Total	222,408	242,856	2,327,635	2,126,062

DESTINATION OF IRON AND STEEL EXPORTS, SEPTEMBER, 1929

(In Gross Tons)

Country of destination	Sept. 1929	Aug. 1929	Jan. thru Sept. 1929	Jan. thru Sept. 1928
N. and Cent. America and W. Indies	111,433	109,270	1,178,757	1,027,606
Canada and Newfoundland	88,107	86,937	968,821	857,961
Cuba	5,939	4,448	52,586	47,251
Guatemala	481	436	5,693	6,418
Honduras	364	434	8,020	4,917
Mexico	8,922	10,958	77,871	61,162
Panama	2,864	1,867	15,732	11,705
Salvador	127	652	5,454	2,670
Brit. W. Indies	1,288	638	15,008	5,919
Other W. Indies	2,703	2,159	22,252	22,705
Other Central America	638	741	7,320	6,898
South America	27,446	26,121	297,589	321,150
Argentina	6,145	5,151	71,504	72,162
Brazil	6,240	6,160	52,655	60,553
Chile	2,898	4,396	44,209	52,761
Colombia	2,424	3,493	33,372	49,068
Peru	6,949	2,258	29,955	19,151
Uruguay	372	366	6,560	6,762
Venezuela	2,042	3,545	54,924	56,916
Other South America	376	752	4,410	3,777
Europe	25,332	40,330	295,219	234,385
Belgium	303	68	2,320	12,175
France	1,059	1,280	15,829	3,825
Germany	246	119	18,106	21,090
Italy	7,888	10,819	93,472	81,613
Netherlands	382	286	2,408	1,703
Poland and Danzig	3,002	13,755	75,081	53,718
Rumania	649	486	3,419	3,646
Soviet Russia in Europe	2,249	3,143	7,635	2,601
United Kingdom	7,825	6,657	51,798	39,074
Other Europe	1,729	3,717	25,151	14,940
Far East	56,014	66,032	538,952	532,732
British Malaya	490	2,270	7,550	5,454
China	6,356	4,623	57,070	76,886
Netherlands E. Indies	3,544	3,543	51,360	30,450
India and Ceylon	1,004	2,381	15,013	18,657
Japan	29,117	40,578	287,767	302,399
Kwantung	566	228	9,282	12,356
Philippine Islands	11,581	6,974	76,908	64,625
Australia	1,348	2,502	17,413	12,243
New Zealand	736	18	3,691	1,801
Other Asia and Far E. markets	1,272	2,915	12,898	7,861
Africa	2,183	1,103	17,118	10,189
Union of S. Africa	813	586	6,760	4,401
Egypt	444	64	6,288	3,430
Mozambique	892	332	2,656	1,006
Other Africa	34	121	1,414	1,352

Exports of Metalworking Machinery

(In number except where otherwise specified)

	September 1929	September 1928	January through September 1929	January through September 1928
Engine lathes	86	56	664	611
Turret lathes	47	14	395	316
Other lathes	110	46	752	593
Vertical boring mills and chucking machines	11	6	182	84
Thread-cutting and automatic screw machines	80	47	760	614
Knee and column type milling machines	53	26	361	259
Other milling machines	60	37	523	529
Gear-cutting machinery	32	23	366	298
Vertical drilling machines	39	19	339	432
Radial drilling machines	7	14	89	114
Other drilling machines	155	75	1,720	964
Planers and shapers	53	25	402	327
Surface grinding machines	21	.....	201	.....
External cylindrical grinding machines	89	72	634	723
Internal grinding machines	37	27	350	370
Tool grinding, cutter grinding, and universal grinding machines	85	65	1,130	504
Pneumatic portable tools	2,125	1,018	19,069	15,407
Chucks for machine tools	715	2,472	16,333	14,005

Grace Holds Outlook For Business Favorable

Current operations of the Bethlehem Steel Corp. of 82 per cent are at what probably will prove to be the lowest point for the last quarter. This statement was made by Eugene G. Grace, president, following the recent quarterly meeting, and was qualified only by the possibility of the upset in Wall Street creating too much business unsettlement, which he regards as unlikely.

The weak spot in the iron and steel situation is in the automotive industry, Mr. Grace declared, and in this quarter, he added, buying of materials could scarcely be poorer, He declared he saw no sign of immediate improvement in the automotive industry, but that offsetting this condition is substantial improvement in car and rail buying and in shipbuilding activities. The Bethlehem shipyards will enter 1930 with the best schedule in years and the company's car bookings are the best in eight years, Mr. Grace said. Earnings for the third quarter after all charges before dividends were $11,384,720, against $11,766,473 in the preceding quarter and $4,272,528 for the third quarter of 1928. The comparative income account follows:

	—Third Quarters— 1929	1928
Net earnings	$17,710,173	$10,491,832
Interest, etc.	2,758,544	2,809,675
Deprec., deplet., etc.	3,566,909	3,409,629
Net income	11,384,720	4,272,528
Pfd. divs.	1,750,000	1,697,500
Com. divs.	*4,800,000	
Surplus	4,834,720	2,575,028

*Includes dividends payable on Feb. 15, 1930, on additional 800,000 shares issued Oct. 21, 1929.

The consolidated income account for the nine months ended Sept. 30 compared with the corresponding period of 1928 follows:

	1929	1928
Net earnings	$51,024,726	$30,834,739
Interest, etc.	8,312,761	8,489,456
Deprec., deplet., etc.	10,515,182	10,158,709
Net income	32,196,783	12,186,574
Pfd. divs.	5,250,000	5,092,500
Com. divs.	10,800,000	
Surplus	16,146,783	7,094,074

Mr. Grace outlined an expansion program which will provide for an increase in Bethlehem's ingot capacity by 1,250,000 tons annually and an increase in its by-product coke oven capacity of 1,000,000 tons. Expansion is being made largely at the company's Sparrows Point and Lackawanna plants.

This includes additions to the plate, sheet and roughing mills at Sparrows Point and additional roughing and billet capacity at Lackawanna. An important item, he said, is installation of equipment for the cleaning and distribution of by-product coke and blast furnace gas at its various properties, thus making for a further reduction in the company's requirements of coal.

Furniture Orders Low

Washington, Oct. 29.—Steel furniture shipments continue to decline and made a new low for the year in September, according to the department of commerce. They were also below September, 1928, and a comparison for the nine months of this year with the same period of 1928 shows a slight decrease. Monthly comparisons follow:

	Business Group Orders received	Shipments	Shelving Orders received	Shipments
	(In Dollars)			
1928				
Sept.	2,689,009	2,754,135	799,850	678,422
Total, 9 mos.	26,494,881	25,912,963	6,938,397	6,636,258
Oct.	3,192,927	3,158,998	958,726	953,804
Nov.	2,675,664	2,854,312	875,354	915,640
Dec.	3,610,645	3,117,139	828,555	791,376
Total, 1928	35,974,117	35,043,412	9,601,032	9,297,078
Jan.	3,892,651	3,614,961	1,099(575	901,970
Feb.	3,060,290	3,242,581	919,557	974,305
March	2,883,716	2,923,363	1,145,632	1,109,876
April	2,880,395	2,844,938	1,095,329	1,131,362
May	2,814,423	2,783,992	1,120,990	1,989,120
June	2,521,630	2,573,674	958,866	920,355
July	2,559,991	2,624,552	939,057	867,496
Aug.	2,417,725	2,482,594	931,468	889,947
Sept.	2,278,575	2,322,535	732,020	689,347
Total, 9 mos.	25,309,396	25,413,190	8,942,474	8,473,778

Electric Sales Increase

General Electric Co. sales billed during the first nine months of 1929 amounted to $301,812,808.55, compared with $242,676,762.07 for the corresponding period last year, an increase of 24 per cent. Profit available for dividends on common stock for the first nine months of 1929 was $47,965,831.71, compared with $36,910,649.96 for the corresponding nine months last year.

Pays Higher Dividend

American Forging & Socket Co., Pontiac, Mich., is paying a dividend of 35 cents a share on its common stock Nov. 1, making 80 cents a share paid in 1929. Earnings to date are reported materially ahead of all 1928 and prospects are for an expansion in 1930.

Newton's Net Lower

Net income of the Newton Steel Co. for the three months ended Sept. 30 was $472,770 after all charges, compared with $799,928 in the preceding quarter. Gross profits for the period were $637,940 against $1,013,505 in the quarter ended June 30.

Eastern Rolling Mill Co. Has Smaller Net

Net earnings of the Eastern Rolling Mill Co. for the third quarter of 1929 after all charges were $113,894, compared with $172,111 in the corresponding period of 1928. Net profit for nine months ended September 30, 1929, amounted to $620,556 after above charges, equal to $2.59 a share on 239,200 shares of stock, against $607,814 or $2.54 a share on same share basis in first nine months of 1928.

Barrel Output Declines

Washington, Oct. 29.—September barrel production declined sharply from August although showing an increase over September, 1928, according to the department of commerce. Production was 668,224 or 54.5 per cent of capacity, compared with 65.2 per cent in August and 50.2 per cent in September, 1928, as reported by 27 companies operating 31 plants. Monthly comparisons follow:

1928	Production	Shipments	Unfilled orders for delivery within 30 days	beyond 30 days
Sept.	593,255	595,640	292,686	704,134
Total (9 mos.)	5,627,004	5,624,451		
Oct.	656,021	661,009	301,782	522,090
Nov.	563,647	568,353	322,135	634,982
Dec.	551,113	549,913	246,460	1,110,983
Total (year)	7,397,784	7,403,726		
1929				
Jan.	558,492	548,581	319,704	1,342,006
Feb.	567,398	563,532	345,365	1,198,481
Mar.	742,165	743,407	393,941	1,076,317
April	771,584	775,481	333,614	935,430
May	836,532	834,699	316,882	899,090
June	774,853	779,567	644,079	904,920
July	790,175	782,411	377,855	994,842
Aug.	806,574	809,860	358,150	847,509
Sept.	668,224	658,583	305,132	793,518
Total (9 mos.)	6,515,997	6,496,121		

Will Build New Furnace

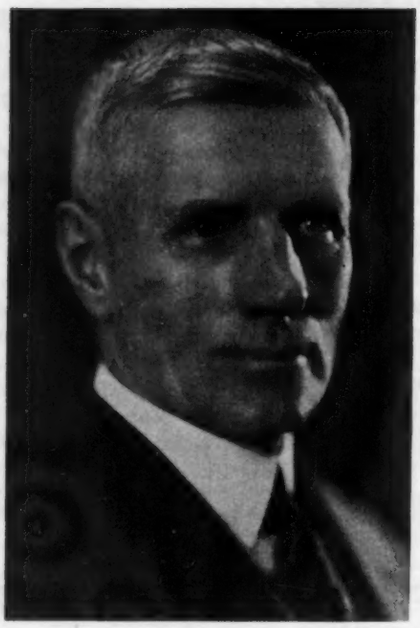
Plans for construction of a new electric furnace by the Central Alloy Steel Corp., Massillon, O., have been announced by F. J. Griffiths, chairman of the company. The new equipment is required to provide for rapidly expanding demand for nirosta, the new stainless steel manufactured by the company under Krupp license.

The new furnace will be located at the Canton works and its cost will approximate $200,000. The company also has authorized an expenditure for new circle cutting equipment, to provide increased facilities for special steel.

The oldest iron manufacture in Japan was at Sugaya, from magnetic sands in 1264.

Industrial Men in the Day's News

John C. Williams, President, Weirton Steel Co., Weirton, W. Va.



THREE countries, Wales, Italy and the United States, have furnished the background for his 35-year experience in steel.

ASSOCIATED with E. T. Weir when both were employed at Monessen, Pa., he has kept step with him for about 26 years.

VICTOR EMMANUEL III, king of Italy, knighted him in 1927, conferring on him the title "Cavaliere della Corona di Italia."

WELSH, Italian and American steel practice, particularly as it relates to tin plate manufacture, is an open book in three volumes to John C. Williams, who late last week was elected president of the Weirton Steel Co., Weirton, W. Va., and Steubenville, O., now operating 50 tin mills, numerous sheet and strip mills and making the pig iron and steel for their operation. He succeeds E. T. Weir, now chairman of the board of the Weirton company and chairman of the proposed National Steel Corp., representing the triple merger of the Weirton Steel Co., Great Lakes Steel Corp. and the M. A. Hanna Co. His identification with steel dates back more than 35 years. Born in Wales March 31, 1876, he gained wide experience in the steel mills of that country and of Italy before coming to the United States at the age of 21. He worked in the mills of Piombino in Tuscany, Italy, of which his father then was superintendent. During that time he learned to speak Italian fluently, which since has stood him in good stead in effective management of the mills of his company which employ so many Italians. In June, 1927, he was knighted by Victor Emmanuel III, king of Italy, becoming Sir John Charles Williams, K. C. I.

Mr. Williams has been first vice president and general manager of the Weirton company. He was identified with E. T. Weir and the late D. M. Weir, when they founded its predecessor company, the Phillips Sheet & Tin Plate Co., Clarkesburg, W. Va., as assistant to the president and in 1917 he was elected its third vice president in charge of the operating department. When the Weirton Steel Co. name was adopted in 1918, Mr. Williams was made vice president and general manager in charge of all plant operations. He was made a director in February, 1926, and general operating head of the company early in September, 1927.

When he came to the country about 32 years ago, he located in Muskegon, Mich., and obtained employment at the Champion Iron & Steel Co., Muskegon, Mich., as superintendent. It operated bar, plate, tin and sheet mills. In 1903-4 he was assistant to E. T. Weir as superintendent of hot mills at the National works, Monessen, Pa., of the American Tin Plate Co., which later became the American Sheet & Tin Plate Co., subsidiary of the United States Steel Corp. The next year the Weirs, with J. R. Phillips, organized the Phillips Sheet & Tin Plate Co. having a capital stock of $250,000. Thirteen years later when the name was changed to the Weirton Steel Co., the capitalization was $30,000,000.

Mr. Williams also is president and director of the Weirton Improvement Co.; director of the Bank of Weirton; vice president and director of the Weirton Coal Co., and the Peoples Bank of Hollidays Cove; and president and director of the Oak Hill Supply Co. He is a member of the American Iron and Steel institute, Steubenville and Clarkesburg Country clubs, Pittsburgh Athletic and Keystone Athletic associations, and Pittsburgh and Steubenville chambers of commerce.

Men of the Industry

JOHN C. WILLIAMS, first vice president and general manager of the Weirton Steel Co., Weirton, W. Va., and Steubenville, O., has been elected president to succeed E. T. Weir, now chairman of the board. Mr. Weir also is chairman of the merger of the Weirton Steel Co., Great Lakes Steel Corp., and the

F. E. FIEGER

M. A. Hanna Co., to be known possibly as the National Steel Corp.

H. D. Westfall was re-elected vice president and two new vice presidents were added, F. A. Hanlin and W. F. Morris Jr.

F. A. Hanlin, former secretary, has been with the company since 1912, when the Phillips Sheet & Tin Plate Co., the Weirton company's predecessor, purchased the Pope Tin Plate Co. He had been connected with the Pope company since 1904. He also is vice president and director of the Weirton Improvement Co., and Oak Hill Supply Co.; secretary and director of Weirton Coal Co.; director of Bates Iron Co., Union Savings Bank & Trust Co., West Virginia Manufacturers' association, Steubenville chamber of commerce, Steubenville Y. M. C. A., and the Ohio Valley Hospital association.

William F. Morris Jr. has been general traffic manager of the company since 1920. He had been identified previously with the Pennsylvania and Great Northern railroads, and the Crucible Steel Corp. of America.

Clinton H. Hunt, chief engineer of the Weirton company since 1915, has been appointed assistant to President Williams. He previously had been identified with the William Tod Co., Morgan Engineering Co., Carnegie Steel Co. and the Youngstown Sheet & Tube Co.

Wilmer A. Murphy, formerly assistant purchasing agent of the Weirton company since 1922, has been appointed secretary to succeed Mr. Hanlin. His early business experience was obtained with La Belle Iron Works and later with the Wheeling Steel Corp., with which it was merged.

* * *

F. E. Fieger, formerly assistant general manager of the Jones & Laughlin Steel Corp., has been appointed general manager to succeed R. J. Wysor, who has resigned to be associated with its former president, Tom M. Girdler, with the Eaton interests of Cleveland. J. Z. Collier, formerly general superintendent of the Aliquippa works, Jones & Laughlin, has been named assistant general manager to succeed Mr. Fieger. J. G. West Jr., formerly assistant general superintendent of the North Side works, also has been appointed an assistant general manager. C. M. White, formerly assistant general superintendent of the Aliquippa works, has been made general superintendent at that plant.

Harry Saxer, formerly superintendent of blast furnaces at Aliquippa, has been made assistant to Mr. White. S. S. Marshall Jr., formerly general superintendent at the South Side works, has been made general superintendent of all Pittsburgh works. H. D. Stark, formerly assistant general manager at the South Side works, has been appointed assistant to Mr. Marshall in charge of the South Side works, while J. C. Murray, formerly superintendent of blast furnaces at the Eliza works also has been appointed assistant to Mr. Marshall and placed in charge of the North Side works.

Mr. Wysor is a graduate of the class of 1906 at Virginia Polytechnic institute where he specialized in metallurgy and applied chemistry. Upon leaving college he became assistant chief chemist at the Duquesne works of the Carnegie Steel Co. After operating a consulting laboratory in New York city and acting as metallurgist for the Panama Canal commission, he became associated with the Bethlehem Steel Co., holding successively the following positions during the period from 1912 to 1925; chief chemist and engineer of tests, super-

R. J. WYSOR

intendent of blast furnaces, superintendent of service division, assistant general manager of the Maryland plant, assistant general manager of the Cambria plant. In 1925 he became assistant general manager of Jones & Laughlin Steel Corp., and in 1928 was made general manager in charge of operations. He is a member of the American Institute of Mining and Metallurgical Engineers and of the American Iron and Steel institute.

Mr. Fieger has been assistant general manager of the Jones & Laughlin Steel Corp. since early 1928. He had been general superintendent of the Aliquippa works and prior to that had been identified with the Whitaker-Glessner Co., now part of the Wheeling Steel Corp.

* * *

Henry M. Kelly, general superintendent of the United Engineering & Foundry Co., Youngstown, O., has retired from active duty after almost

43 years of continuous service. He has been succeeded by E. E. Cross of Corry, Pa., formerly with the Carnegie Steel Co.

Mr. Kelly entered the employ of Lloyd Booth & Co., predecessors of the United Engineering & Foundry Co., at the age of 19, as an office boy. He was advanced steadily until he became assistant manager of the Lloyd Booth plant of the present company.

G. W. Knotts, also identified with the company for about 40 years, continues as district manager at Youngstown.

Robert McGhie, foreman of the Youngstown plant, also has resigned but his future plans after a 3-month trip to Florida has been completed are not announced.

* * *

Charles Dreifus, president, Charles Dreifus Co., Pittsburgh, iron and steel scrap dealer, has returned from a two months' trip abroad.

* * *

Jesse Fisher, who on Nov. 1 becomes head of the safety department of the Newton Steel Co., Monroe Mich., has been chief of the police department there for the past three years.

* * *

George Wood, formerly district sales manager, Wackman Welded Ware Co., St. Louis, has been made manager of new branch plant recently completed at Tulsa, Okla.

* * *

Thomas I. S. Boak, formerly superintendent of one of the plants of Goulds Pumps Inc., Seneca Falls, N. Y., was recently made works manager of all plants.

* * *

R. L. Agassiz, chairman of the board of the Calumet & Hecla Consolidated Copper Co. of Boston, was re-elected president of the Copper and Brass Research association at the ninth annual meeting, Oct. 24.

* * *

A. A. Ginsburg, vice president and general manager of the Hayes Body Corp., Grand Rapids, Mich., resigned after being in the company's employ for 15 years. He has been succeeded by E. J. Connolly.

* * *

Sir Charles Gordon, president of the Bank of Montreal, has been appointed a director of the British Empire Steel Corp. and its subsidiaries.

* * *

Charles Le Geyt Fortescue, chief consulting transmission engineer for the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been granted the honorary degree of doctor of laws by Queens university in recognition of his work in electrical transmission engineering.

* * *

Herbert E. Fenner, general service manager of the American Bosch Magneto Corp., Springfield, Mass., sailed recently from New York to make an extended tour of inspection of branch houses and distributors for his company in all principal cities and many smaller ones in South America.

* * *

L. W. Cross, European manager of the Manganese Corp., London, owner of the Postmasburg manganese mines in South Africa, has arrived in the United States on business for his company. He is making his headquarters with William H. Muller & Co., 122 East Forty-second street, New York, American representatives of the Manganese Corp.

* * *

Maurice M. Wheldon has been appointed assistant superintendent of blast furnaces for the Pittsburgh Steel Co. at Monessen, Pa. Mr. Wheldon had been identified with the Federal furnaces of the By-Products Coke Corp., Chicago, and previously was connected with the Wellston Iron Furnace Co., Wellston, O., Lavino Furnace Co. furnaces in eastern Pennsylvania, and Globe Iron Co., Jackson, O.

* * *

Arthur Kane, formerly associated with the Giddings & Lewis Machine Tool Co., Fond du Lac, Wis., resigned to become vice president of John Ehne & Son Co., 185-189 Lincoln avenue, Milwaukee, manufacturer of metal and wood patterns. The company has increased its capital and is placing Mr. Kane in charge of a pattern engineering sales and service division comprising the middle western states, now being inaugurated. J. Arthur Ehne is president and general manager.

* * *

Henry J. Freyn, president, Freyn Engineering Co., Chicago, returned Oct. 18 from a trip abroad. For three months he has been in Russia in connection with consulting work his company is doing for the iron and steel industry of the Soviet government.

P. J. Hale, Freyn Engineering Co., sailed Oct. 25 for England where he will be resident engineer for his company in connection with the blast furnace plant to be built near London for the Ford Motor Co., Detroit.

* * *

Edward B. Newill has resigned as manager of the control engineering department, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., to become affiliated in an executive capacity with the radio manufacturing company being formed jointly by the General Motors Corp. and the Radio Corp. of America. He entered upon his new duties, Oct. 16, as assistant to the president of the Delco Products Co., with temporary headquarters at Dayton, O.

* * *

W. C. Wallis, recently superintendent of blast furnaces at the Brier Hill works, Youngstown Sheet & Tube Co., has been appointed assistant general superintendent at that plant. P. D. Cromwell, formerly blast furnace superintendent at Hubbard, O., has been made superintendent of furnaces at the Campbell works.

C. D. Edwards, former superintendent of rolling mills of the Youngstown company at Indiana Harbor, Ind., has been appointed assistant general superintendent and is succeeded by George W. Abel, formerly assistant superintendent of slab mills, South works, Illinois Steel Co., Chicago. Mr. Edwards had been identified with the company at the Indiana Harbor location for 12 years.

L. H. Underwood has resigned after being superintendent of blast furnaces and coke plant for the Youngstown company at Indiana Harbor for four years.

* * *

Jan R. Dunsford, vice president of the Lewis Foundry & Machine Co., Pittsburgh, has been elected president of the Union Steel Casting Co., Pittsburgh, both companies of which are subsidiaries of the Blaw-Knox Co., Blawnox, Pa. He succeeds J. P. Allen, who has resigned as president but who retains his directorship. Mr. Allen plans an extended rest before again becoming actively engaged in business. He had been identified with the company for 27 years and served as president and general manager since 1918. Previous to this connection, he was associated with the American Steel Foundries, at one time as superintendent of the Alliance, O., plant. Mr. Dunsford became affiliated with the Lewis company in January, 1928, prior to which time he acted as sales manager for the Wheeling Mould & Foundry Co., Wheeling, W. Va.

C. H. Lehman, secretary of the Blaw-Knox Co., has been elected secretary of the Union Steel Casting Co. to succeed W. C. Eichenlaub, who has resigned to become associated with the Pittsburgh Steel Foundry Corp., Glassport, Pa., as sales manager. Mr. Eichenlaub had been connected with the Union company for 25 years. George Daumbauld, assistant treasurer of the Blaw-Knox Co., has been elected a director of that company.

Q. S. Snyder has been elected president of the Pittsburgh Rolls Corp., Pittsburgh, subsidiary of the Blaw-

Knox Co., to succeed D. L. Eynon, recently deceased. He also has been elected a Blaw-Knox director. Mr. Snyder joined the Pittsburgh Rolls Corp. ten years ago as vice president and has been general manager for three years.

* * *

George M. Bechtel, formerly at the Los Angeles office, Combustion Engineering Corp., New York, recently was appointed branch manager at Seattle, with headquarters at 1411 Fourth Avenue.

* * *

H. B. Kraut, president and chairman of the board, Giddings & Lewis Machine Tool Co., Fond du Lac, Wis., and K. F. Gallimore, chief engineer, have sailed for Europe to perfect a co-operative manufacturing plan with machine tool concerns in Germany.

* * *

Walter Kasten, president, First Wisconsin National bank, Milwaukee, J. O. Eaton, Otis & Co., Cleveland, and R. L. Porter, First National bank, Chicago, were added to the board of directors of the Harnischfeger Corp., Milwaukee, manufacturer of cranes, hoists, excavating machinery, etc.

* * *

William E. Crawford, of the electrical engineering staff of the A. O. Smith Corp., Milwaukee, has been elected president of the Engineers Society of Milwaukee. Mr. Crawford is 30, one of the youngest presidents the society has had. He came to Milwaukee to join the Smith organization in 1920. T. Chalkley Hatton, consulting engineer and formerly chief engineer of the Milwaukee sewerage commission, was elected vice president. H. W. Rhode, secretary, and Walter R. Mueller, treasurer, were re-elected. Newly elected directors are Bruno V. Nordberg, W. D. Bliss and E. H. Mack.

* * *

Kurth J. Papke, for five years sales manager of the Durant Mfg. Co., Milwaukee, counting and measuring machines, has resigned to engage in business as manufacturers' representative of K. J. Papke Co., 290 Third street, Milwaukee. It takes over representation of the Durant company in Wisconsin, and also represents Divine Bros. Co., Utica, N. Y., casters and truck wheels; Precision Thermometer & Instrument Co., Philadelphia; Universal Engineering Co., Frankenmuth, Mich., drill bushings; Welded Products Mfg. Co., Cudahy, Wis., factory stools, platforms, trucks, etc., and Wright Machine Co., Worcester, Mass., screw machine products and metal specialties.

Motor Camshaft & Parts Corp., Grand Rapids, Mich., has increased capital from 7500 to 75,000 shares no par value.

Shape Book Published

The Carnegie Steel Co., Pittsburgh, has just published an 86 page booklet containing complete data on the profiles, properties and safe loads for additions to the new series of structural steel beams and column sections which that company manufactures. This book, designated the third edition, cancels and supersedes one bearing the same title and published as the second edition under date of Nov. 1, 1928.

The wire produced in early times was flat and is not found in the round form which we now use.

Obituaries

WILLIAM J. STOOP, who late in 1926 resigned as general engineer of the Wheeling Steel Corp., Wheeling W. Va., to become president and general manager of the Morgan Engineering Co., Alliance, O., died at his home in Pittsburgh Oct. 23, after an illness of several months. As a young man he obtained employment with the Carnegie Steel Co. He became in turn general superintendent of the Mackintosh-Hemphill Co., Pittsburgh, and the Mesta Machine Co., West Homestead, Pa., and about 18 years ago he became general superintendent of the Portsmouth Steel Co., now the Portsmouth, O., plant of the Wheeling Steel Corp. After about four years, he became identified with the M. H. Tredwell Co., Easton, Pa. In January, 1916, he left to become general engineer of the Whitaker-Glessner Co., in which capacity he had charge of the construction of the Beech Bottom plant. When the company was merged with the Portsmouth Steel Co. and as the plant neared completion, Mr. Stoop was named assistant to the vice president in charge of operations. About 10 years ago, when the Whitaker-Glessner Co. and the Wheeling Steel Corp. merged, Mr. Stoop was named assistant to Vice President Andrew Glass, in charge of operations and when the latter resigned from the Wheeling Steel Corp. to establish a brokerage business in New York, Mr. Stoop was appointed vice president in charge of operations of the entire corporation. He discharged those duties for four years and when Mr. Glass returned to Wheeling, Mr. Stoop was appointed general engineer of the corporation, serving until late December, 1926, when he took up his duties with the Morgan Engineering Corp.

* * *

Louis Schwab, 53, vice president, Automatic Switch Co., New York, was accidently asphyxiated in the garage of his home in Worcester, Mass., Oct. 27.

* * *

William C. Frick, 77, pioneer in the iron and steel industry of Pennsylvania, died at his home in Danville, Pa., recently after an illness of six months.

* * *

Arthur F. Hegewald, 62, president and owner of the Charles Hegewald Foundry & Machine Co., New Albany, Ind., died Oct. 19. He had been sole owner and operator of the foundry since five years ago, when he purchased his brother's interest. The business had been founded by the late Charles Hegewald, father of Arthur and Edward Hegewald. Mr. Hegewald was a native of New Albany and always lived there, taking an active interest in the development of the Ohio river. The company had constructed steel barges and manufactured marine products for several years.

* * *

Edward T. Clymer, 70, at one time prominently identified with the iron industry of Allentown, Pa., and vicinity, died at his home in Philadelphia, Oct. 13. He was graduated from Lafayette college, where he took a course in chemistry. He early located in Allentown, becoming chemist for the Ainey furnaces. Later, with Leonard Peckitt, Catasauqua, Pa., he operated a chain of blast furnaces through the Lehigh valley, including the Allentown Iron Works, of which he was superintendent. He was one of the incorporators of the original Lehigh Telephone Co. and was associated with the Allentown & South Allentown Bridge Co. Inc., which was organized for the purpose of constructing the Eighth street bridge.

How Steel Application Assists Advancement

(*Concluded from Page* 1095)

coils or sections of this cable were tested at various voltages at a pressure of 15,000 pounds before being laid on the sea bottom. It may well be that this container will prove the forerunner of other similar full-size tests under extremely high pressures.

Seventy-five years ago two-thirds of the population lived in the country. Today it is estimated that only 43 per cent are rural dwellers. All rural dwellers are not farmers, but for purposes of comparison we may say that in the earlier period ten farmers provided food for themselves and five city dwellers. Today ten farmers provide for themselves and thirteen city dwellers. The increase in productivity is due to steel. The power tractor, the multiple plow, and the many farm implements for tilling the soil and gathering the harvest, as well as the rail, water and automotive transportation utilized to conserve time and broaden markets, are possible because of steel.

Is Godsend to Farmer

The full enjoyment of life involves more than labor. For years the farmer in his isolation was deprived of participation in the entertainment and the interest which seemed to make the city dweller's lot more desirable. Today the farmer, with his automobile and improved roads, can share the city's amusements. His radio entertains him as he sits comfortably at home. With water and electric power brought to his door, he can enjoy the same creature comforts as his city neighbor. All of these and more he owes to the low cost production of steel.

The farmer's problem in providing the country with food has been materially assisted by the development of the canning industry. Excess production no longer rots but is hermetically sealed in containers in such a way that the contents are not contaminated. Preservation for long periods is possible without the aid of refrigeration. This process has been so successful that the use of tinplate containers has extended to many other substances than food products.

Thin sheets of steel somewhat thicker than those used in tinplate, with or without a coating of zinc, form the raw material of a widely increasing field of manufactured steel articles which are too numerous to name.

Probably the most rapidly growing use of the straight chrome stainless steels is in the manufacture of containers for acids or other corrosive liquids. This has involved the working out of methods of forming, riveting and welding the stainless steels, but certainly in the case of nitric acid containers the experimental stage may be said to be past.

The field open to these stainless steels today seems almost unlimited. In addition to the corrosive acids, containers for other liquids, like milk and other food products, are indicated. Many liquids which have been recognized in the past as unsuited for steel containers are without effect on stainless steels, and the use of stainless steel for containers is certain to extend rapidly.

Steels Resist Heat

In addition to their stainless character, these steels are quite as interesting in their behavior at high temperatures. In fact, the heat resisting qualities bid fair to become just as important as their corrosion resistance. These two qualities taken with their workability in forming and machining present an excellent field for the experimenter.

Some of the high chrome nickel steels exhibit a degree of stainessness even more pronounced than the straight chrome steels. Steel containing 18 per cent chromium and 8 per cent nickel has been developed which, by a combination of very careful steelmaking and heat treatment, shows qualities that permit its use to replace the noble metals, gold and platinum. Kitchen utensils, plates and wire for artificial teeth, watch cases, dental and surgical instruments, and the finest of hypodermic needles are a few of the products already made commercially. The resistance to corrosion of this ferric metal is almost unbelievable. Samples exposed to the atmosphere for years have the same mirror polish as when originally made.

Wide Range of Products

From single forgings weighing 200 tons to steel wool so fine that the delicate individual threads do not suggest their metallic character is a long step which indicates immense range in the applications of steel. Here is a material soft and wool-like, made up of filaments, each of which has cutting edges which give it effective abrasive qualities. This material is displacing older types of abrasives, such as sand paper, and in addition is much in favor for household cleaning purposes.

The few uses of steel which we have here considered are just so many landmarks in the long journey of progress that the industry has traveled in the past two generations. To plot that journey in all its details, and show how steel has entered successively into one department of human activity after another, until now virtually no civilized man passes a single day of his existence without making use of this versatile metal, would be a long story for which this is not the place.

Using Thermit Welding in Steel Mills

(*Concluded from Page* 1097)

It is perfectly feasible to make wabbler ends of a steel offering the greatest possible wear resistance and to thermit weld such wabbler ends to the necks of ordinary rolls. New ends for charging peels may be kept on hand and welded as required to replace other broken or worn ends. Thermit steels of extreme hardness may be cast on surfaces subject to wear or even in the bore of cylinders.

The co-ordination of the various departments of steel mills in welding work is most important if fullest benefits are to be enjoyed. It is, of course, not feasible to have a number of independent welding departments in one plant, nor is it feasible for the various mill superintendents to keep in close touch with a central welding department. This question has been solved in certain mills by the organization of a reclamation department under a suitable head, who, together with the mill superintendent interested, has the final say as to which broken or worn parts should pass on to the scrap pile and which should be reclaimed. The mere existence of a welding department and the experienced welders will not in itself effect the desired economies, and the installation of a co-ordinated reclamation department, or some suitable substitute, at present seems very important.

Iron, Steel Products at Petroleum Show

(*Concluded from Page* 1105)

tor Welding Equipment Co., San Francisco; and Stoody Corp., Whittier, Calif.; hardfacing material was shown and demonstrated by Haynes-Stellite Co., Kokomo, Ind., and Blackor Co., Los Angeles. Further recognition was accorded the welding industry by staging of a pipe line welding contest on the grounds and a technical program by the American Welding society in the exposition auditorium.

Power equipment including gas en-

gines and compressors was displayed under actual operating conditions by Ingersoll-Rand Co., New York; Clark Bros. Co., Olean, N. Y.; Cooper-Bessemer Corp., Mt. Vernon, O.; Chicago Pneumatic Tool Co., New York, and others. Steel castings were exhibited by Sivyer Steel Castings Co., Milwaukee; Allegheny Steel Co., Brackenridge, Pa.; and Oklahoma Steel Castings Co., Tulsa. Rolling mill products were shown by Tulsa Rolling Mills, Tulsa, and American Rolling Mill Co., Middletown, O., the latter also displaying ingot iron roofing, pipe, plates and galvanized products. Wire products, principally wire rope, were displayed by American Steel & Wire Co., Chicago; American Cable Co., New York; Leschen Wire Rope Co., St. Louis; Broderick & Bascom Rope Co., St. Louis; and Hazard Wire Rope Co., Wilkes-Barre, Pa. Botfield Refractories, Philadelphia, exhibited various lines of refractory products.

Steel derricks, rapidly replacing the wooden type in oil field service, were set up on the grounds and rigged up for actual drilling, simulating an active oil field. International Derrick & Equipment Co., Los Angeles; L. C. Moore & Co., Pittsburgh, and Parkersburg Rig & Reel Co., Parkersburg, W. Va., were among exhibitors of this class of equipment.

Miscellaneous exhibits consisted largely of valves, small tools and the like. During the exposition the oil buyers group of the National Association of Purchasing Agents met in Tulsa to consider the matter of uniform marking of valves and fittings. Plans were made for preliminary work toward this end.

Fatigue Failure Cause Not Crystallization

(*Concluded from Page* 1099)

in ordinary laboratory tests. On the other hand there seems to be a fair correlation between the endurance limit as determined by fatigue tests and the tensile strength. As will be discussed in the concluding paragraphs, fatigue failure seems to be the spreading of an actual fracture. In fact, the name progressive fracture would be better than the name fatigue failure. It is, therefore, not unreasonable to find the correlation between fatigue strength and tensile strength.

Fatigue strength shows no well-marked correlation with ductility. Ductility is valuable in a material not because it adds directly to its strength, but because it provides a reservoir for absorbing the energy of occasional overloads without actual fracture. Ductility may be regarded as insurance against shattering fracture under a single heavy overload.

No correlation can be found between fatigue strength and the results of the Charpy or Izod tests of notched bars. Fatigue tests, like most other tests, have failed to show just what is the significance of these interesting notched-bar tests. The Brinell, scleroscope, and Rockwell hardness of a material seems to be closely allied with its tensile strength and also with its fatigue strength.

The process of rolling or drawing metals cold greatly increases their elastic strength and somewhat increases their tensile strength. Tests of various metals in fatigue show that for the irons and steels cold-working increases the fatigue limit in about the same proportion that it increases the tensile strength. For some of the nonferrous metals cold working does not seem to increase fatigue strength very much. It seems that, if the cold working is severe enough to start actual cracks in the metal, it tends to damage rather than to improve its strength. This is discussed in the concluding paragraphs.

General Theory of Fatigue Failure

The last few years have brought about a revolutionary change in our thinking in nearly all fields of physical science. In the field of the strength of materials, while the newer ideas have not been so dramatic as in some of the fields, yet they have involved profound changes in thought. We do not at present know the nature of cohesion of the particles of a solid. We can go no further than to say that there seems to be something which acts like an "attraction," which tends to hold atoms together, probably balanced by a "repulsion" which keeps them a certain distance apart. Whether such "attractions" and "repulsions" follow the inverse square law of distances, which seems to be a very close approximation for describing gravitational "attraction" between bodies, is not known. Hence, atoms tend to form regular geometric patterns. Actually they gather in groups having different orientations of the ruling pattern. Probably, as a piece of metal solidifies, there is actually formed a network of minute cracks analogous to the cracks formed in the surface of dried mud. So that for a piece of metal only a small proportion of the cohesive actions of the particles of a solid is effective. These cracks do damage in two ways: (1) they actually reduce the effective area of cross-section of a piece of metal, and (2) there is a tendency for heavy stress-concentration at their ends. If this picture is true, it is not surprising that the tensile strength of a piece of steel is only about one-twentieth the theoretical cohesive value as determined by physicists. Under a steadily increasing load there comes a point where inside a crystalline grain, which may be thought of as a group of atoms all arranged in an oriental family pattern, a sliding occurs between layers of atoms. The result of this, as seen through the microscope is a series of slip lines or slip bands shown in the accompany illustration. This slipping does not imply fracture; and after the slip the material is actually stronger than before. The slipping does imply plastic distortion of the metal. Under this same load the little cracks which are supposed to exist in the material must spread somewhat, but after that spread there is a tendency for their ends to become more rounded and thus to reduce the stress concentration.

Finally a position of equilibrium is reached in which the benefit of reduced stress concentration balances the damage of reduced area. Now if the load be repeated, and especially if it be reversed a great many times, there is a tendency for a grinding, and possibly a wrinkling action to take place along planes of slip and to start new cracks. At the end of the cracks already formed, as they open and close under repeated stress, there is a tendency for the stress-concentration to increase when they are sharpened by closing, and to become less when they are opened again.

Spread Is Cumulative

When, due to any action a crack spreads it probably is never "healed" by any action short of fusion. Hence the spread of a crack under repeated stress is a nonreversible cumulative process. It is, then, possible to have a progressive fracture, commonly known as a fatigue failure, under a repeated stress while the same stress applied but once would do no particular amount of structural damage to the metal.

This picture of fatigue failure is entirely different from the old idea of "crystallization" which was developed before the days of the metallurgical microscope. The tendency in steel under stress is not for a formation of a new crystalline system but for the fragmentation of crystalline grains already in existence.

George W. Evans, a consulting engineer, estimates that at the present rate of production Washington state's coal supply will last 21,000 years.

Scrap Institute Furthers Research

Plans Survey to Determine Scope and Finances of Industry, to Ask More Favorable Freight Rates, and Set Up Fund—1930 Meeting in Chicago

RESEARCH as a means of improving conditions in the scrap iron industry, widening markets, and conserving the natural resources of the country, was the principal keynote of the meeting of the national advisory council of the Institute of Scrap Iron and Steel in New York, Oct. 24. Co-operation with consumers, the freight rate structure, unfair competition between dealers and brokers and the organization of an export corporation were other subjects discussed. The council decided to:

Conduct an immediate survey of the investment, employment and scope of the scrap iron industry, production, consumption and distribution of scrap.

Prepare a case before the interstate commerce commission, with the aim of reconsidering the freight rate structure of scrap iron and steel.

Create a $50,000 working fund, in addition to the annual dues paid by the members.

Hold the next annual meeting of the institute in Chicago in March, 1930.

A frank discussion of the problems of the industry under the leadership of Benjamin Schwartz, director general, characterized the conference. Representative dealers from all sections of the country, representing the 12 chapters of the institute, were present.

Criticizes Selling Practices

The psychology and unfair competition among the scrap dealers was sharply criticized by Mr. Schwartz in his keynote address. He said:

It seems that the scrap iron business has in the past been conducted by intuition and not by facts. Intuition found the dealers long or short on the market, but it rarely found them with an assured profit, based on the facts of merchandising. Nobody was interested to plan ahead for the future of the industry. Nobody has been interested, because we, ourselves, were never interested in our future. One must search far and wide to find an industry like this one, that has operated in the dark, that has submitted in silence to circumstances, that should have been corrected, and that stood by complacently while events were happening, that should have been correctly interpreted.

One of the so-called trade customs that seems to have the sanction of law in this industry, is the privilege or custom of one dealer cutting his own, as well as his competitor's, throat. This questionable privilege has been jealously guarded and preserved for years past, while on all sides of the industry co-operation, mergers and adjustment to modern conditions were flashing signals to the scrap iron dealers that were completely ignored. It is a rare dealer who knows the costs of his operations, or knowing it, knows how to use them. The psychology that has prevailed has been "What can I lose?" and not "How much profit can I make?" It is a rare dealer who has included in his vocabulary the simple word "No," when faced with a proposition on which he should know he cannot make a profit, were he to consider himself as a merchant of service or a manufacturer, as he properly should be. The mania for volume without regard to the interests of competitors has created a menace that will prove a boomerang to those who live by this rule. The problem in this industry is not price cutting but price boosting in the purchase of the materials of this business.

Changes Will Take Place

This scrap iron industry must dig into facts and must learn to face them. The knowledge of the few, which has been erroneously considered the secrets of the trade, must be made the possession of the industry. With the changes that will inevitably occur in the scrap iron industry in the next few years, this industry can benefit from the successful experience of American business by calling upon research to improve its service and create greater markets.

This constructive program must be undertaken, if the scrap iron industry is to be recognized as an industry, and if it is to be in a position to demand certain fundamental rights, without which no business relationship can be profitable. The signs of the times all point to the elimination of business men or of an industry that does not keep pace with the progress of American business, that refuses to adjust itself to conditions, that continues to function blindly on the basis of intuition and speculation. The Institute of Scrap Iron and Steel has fortunately arrived at a time when men are beginning to realize the value of organization, when men are beginning to sense an industrial responsibility and consciousness. This program should be placed in the hands of leaders who have vision, and the interests of the industry beyond their own selfish concern. The institute should be strengthened to meet its opportunities and demands for service.

Organization of an export corporation for scrap iron and steel was recommended by Luther Becker, chief of the iron and steel division of the department of commerce. According to Mr. Becker, over 516,000 tons of scrap iron and steel were exported by the United States during 1928, approximately five times the tonnage exported in 1926. Mr. Becker said:

The unprecedented shipment of iron and steel scrap by the United States to foreign markets during the last two and a half years has created an unusual interest among domestic dealers of this country, indicated by the numerous inquiries as to economic reasons behind the sudden and phenomenal growth of this trade. The use of scrap iron and steel abroad has increased steadily during the last few years in the making of raw steel. In some instances furnaces are being charged with as much as 60 per cent scrap and only 40 per cent pig iron. This trend has been particularly true in several of the European and Asiatic countries where there is a scarcity of domestic iron ore, notably in such countries as Italy, Poland and Japan, and to a lesser extent in Germany and Belgium. Due to this increased demand and resultant relative scarcity of scrap, prices of this commodity abroad have risen until it is now profitable to ship this material from the United States great distances to a market.

Announces Research Program

The research program, as outlined by E. G. Howell, Chicago, chairman of the research committee, covered five fields: 1, A survey of the industry; 2, Specifications; 3, Conservation, with special reference to alloys; 4, Methods of operation, including cost accounting; 5, Economics of the industry, including the problem of direct dealing between producers and consumers of scrap.

The trade customs committee, of which Harry Ehrlich, Springfield, Mass., is chairman, submitted a series of clauses to be included in a uniform contract, which it is planned to formulate for the scrap iron industry.

The trade relations committee, of which Charles Dreifus, Pittsburgh, is chairman, reported that it had heard evidence in five cases filed with the institute by leading consumers of scrap, involving violations of the code of business practices and had adopted measures to prevent a recurrence of these complaints.

European Competition Is Sharper

Continental Steelworks Reducing Operations and Making Low Prices in Britain —Pig Iron Imported at Middlesbrough—Krupps Laying Off Workers

European Headquarters,
IRON TRADE REVIEW,
Caxton House, Westminster, S. W.1

LONDON, Oct. 29.—(*By Radio*)—British iron and steel producers report keener competition from the Continent. IRON TRADE REVIEW'S correspondent at Brussels says conditions in the Belgian market are unsatisfactory, with prices weakening and export business falling off. Some Belgian steelworks have restricted operations. A similar report is received from Berlin, works reducing operations. Krupp have laid off 900 men. The domestic markets in France continue quiet, and the outlook is less promising. As a reflection of this situation, foreign pig iron is entering Middlesbrough, ordinarily a large British exporting center, while demand for iron produced in Middlesbrough is quiet. Domestic prices, however, are firm. East coast hematite stocks are increasing. Midland foundries are reported to be buying ahead.

Demand for British finished steel is contracting, though semifinishing mills are fully employed, as are the steelworks in South Wales, nothwithstanding foreign competition. The market for tin plate is quieter. Galvanized sheets are dull. Additional large orders for locomotive tires for shipment to South Africa have been placed at Sheffield, with substantial orders for heavy forgings and other domestic requirements.

British Merger Welcomed as Aid to Business

BIRMINGHAM, Eng., Oct. 18.—(*European Staff Special*)—The feature of interest this week has been the definite announcement of a fusion scheme uniting the vast interests of two great Teesside steel firms, Dorman Long and Bolckow Vaughan. Industrialists have welcomed this move, which has been rumored for many months. It unites two firms who have between them a capital of over 17 millions and the new concern will be the greatest steel producing unit in England and probably what is more important, the new combine will be able to work with

Sterling $4.87

greater efficiency and economy because they have large reserves of raw materials, so that all the industrial processes will be co-ordinated from the mining of raw materials to erection of bridges and structural work.

Sheffield steel firms have been prominent this week in booking overseas orders which will provide work for some months. The English Steel Corp. Ltd. has secured orders for 16 reaction chambers of high grade steel, eight of which will be made by Vickers works and the others by John Brown & Co. Ltd. at their Atlas works, Sheffield. The orders have been received by English representatives of the M. W. Kellogg Co., Jersey City, U. S. A., who are supplying the reaction chambers for Anglo Persian Oil Co.

Railway improvement schemes in Britain totaling £6,500,000 as a beginning are likely to provide employment for thousands of men for several years. Main line electrification is one of the most important questions for consideration, while in

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, October 28	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable		£ s d		£ s d		£ s d		£ s d
PIG IRON								
Foundry No. 3, Silicon 2.50-3.00	$17.69	3 12 6*	$17.08	3 10 0	$17.08	3 10 0	$17.56	3 12 0
Basic	16.71	3 8 6	16.59	3 8 0	16.59	3 8 0	16.84	3 9 0
Basic-bessemer	18.54	3 16 0†	16.59	3 8 0	16.59	3 8 0	16.84	3 9 0
Hematite, Phosphorus 0.02-0.05	18.42	3 15 6	24.82	630*	.....	.....	17.81	3 13 0
SEMIFINISHED STEEL								
Billets	$31.11	6 7 6	$22.45	4 12 0	$22.45	4 12 0	$23.42	4 16 0
Wire rods	41.48	8 10 0	31.11	6 7 6	31.11	6 7 6	30.50	6 5 0
FINISHED STEEL								
Standard rails	$40.26	8 5 0	$31.72	6 10 0	$31.72	6 10 0	$32.21	6 12 0
Merchant bars	1.74c	8 0 0	1.13c	5 2 6	1.13c	5 2 6	1.18c	5 7 0
Structural shapes	1.60c	7 7 6	1.11c	5 1 0	1.11c	5 1 0	1.12c	5 1 0
Plates, ship, bridge and tank	1.76c	8 2 6	1.36c	6 3 6	1.36c	6 3 6	1.37c	6 5 0
Sheets, black, 24 gage	2.17c	10 0 0	2.37c	10 15 0	2.37c	10 15 0	2.33c	0 12 0
Sheets, galvanized, 24 gage, corrugated	2.85c	13 2 6	2.93c	13 6 3	2.93c	13 6 3	2.97c	13 10 0
Bands and strips	2.17c	10 0 0	1.21c	5 10 0	1.21c	5 10 0	1.24c	5 13 0
Plain wire, base	2.06c	9 10 0	1.60c	7 5 0	1.60c	7 5 0	1.62c	7 7 0
Galvanized wire, base	3.04c	14 0 0	2.01c	9 2 6	2.01c	9 2 6	2.00c	9 2 0
Wire nails, base	2.39c	11 0 0	1.71c	7 15 6	1.71c	7 15 6	1.71c	7 15 0
Tin plate, base box 108 pounds	$ 4.64	0 19 0	.....	.....	.....	....	$ 9.02	1 17 0

*Francs

Domestic Prices at Works or Furnace—Last Reported			Francs			Francs		Marks
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$17.69	3 12 6	$18.72	475(2)	$17.30	620	$20.34	85
Basic pig iron	16.71	3 8 6	20.09	510(1)	16.60	595	21.78	91
Furnace coke	4.39	0 18 0	6.30	160	5.86	210	5.15	21.50
Billets	31.11	6 7 6	24.43	620	24.83	890	28.95	121
Standard rails	1.79c	8 5 0	1.46c	810	1.63c	1,250	1.53c	140
Merchant bars	1.79c	8 5 0	1.34c	745	1.27c	980	1.54c	141
Shapes	1.76c	8 2 6	1.26c	700	1.22c	935	1.50c	138
Plates ship, bridge and tank	1.93c	8 17 6‡	1.46c	820	1.46c	1,125	1.72c	158
Sheets, black, 24-gage	2.28c	10 10 0	2.87c	1,595	2.47c	1,900	2.45c	225
Sheets, galvanized 24 gage, corrugated	2.90c	13 5 0	3.55c	1,970	3.58c	2,750	3.81c	350
Plain wire	2.06c	9 10 0	1.94c	1,075	2.15c	1,650	2.45c	225
Bands and Strips	2.17c	10 0 0	1.49c	825	1.46c	1,125	1.79c	164

*Middlesbrough; †Scotch foundry iron; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 18s 0d ($4.39) f. o. b. Ferromanganese £21 13s, 0d ($105.65) delivered Atlantic seaboard, duty-paid. German ferromanganese £15 0s 0d ($73.20) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

the future there will probably be a much bigger move in the substitution of steel sleepers for timber. Railway developments, however, depend a good deal upon the extent to which the goverment is prepared to assist in the raising of capital.

The Birmingham market was quieter yesterday than for some time. The dominant feature was the low scale of quotations from the Continent, which made trading difficult whether in English or imported material. Beyond the ordinary regular demand for continental strip and bars there was no eagerness to buy at the slump prices now prevailing. Indeed it was difficult to discover the market prices of Belgian products, inasmuch as merchants were competing keenly for business. Billets were offered at £4 14s ($22.87) Antwerp and steel bars £5 7s ($26.04).

In the Staffordshire wrought iron trade the crown iron makers are endeavoring to follow the lead of the marked bar mills in placing selling prices upon a more economical basis in comparison with the cost of pig iron. Sellers on the exchange yesterday regarded £10 7s 6d ($50.51) as a minimum for Staffordshire crown bars as compared with £10 ($48.70) a week ago. Makers are competing keenly for orders, however, and it is difficult to establish a new price especially when outside districts are willing to take less money.

German Steel Works Dismissing Workers as Orders Show Decline

BERLIN, Oct. 18.—(*European Staff Service*)—The report of the United Steel Works Co. for the quarter ended Sept. 30, 1929, shows a decline of unfilled and specified orders to 81.9 per cent of the monthly average for 1927-28, compared with 100 per cent June 30, 1929. This decline, which is partly seasonable, reflects decreasing occupation in the German iron and steel industry, resulting from general reduction of economic activities. Short-time working is growing with many producers, and to some extent the present occupation can be continued only by working on stock.

German pig iron production for September reflects a decline of 5 per cent to 1,108,925 metric tons, which contrasts, however, with only 985,413 tons in September, 1928. In the Krupp foundry about 1000 workers have been given notice, and workers also will be dismissed at the Friedrich-Alfred smelting plant belonging to Krupp. The United Steel Works Co. plans further dismissals if bookings proceed as unsatisfactorily as at present. The Rheinische Metallwarenund Maschinenfabrik, of Dusseldorf, is preparing for dismissal of 730 workers, and the Bismarckhutte is to work holiday shifts. Notwithstanding this unfavorable situation, the fiscal year ended Sept. 30, 1929, was satisfactory for the United Steel Works Co., which during that period again reached a total turnover of 1,433,000,000 marks against 1,438,000,000 marks in 1928. During the past 12 months, as well as during the past quarter, this concern produced more coal and coke than in 1927-28, wheras a slight reduction was registered in its output of pig iron and raw steel. The output of this company during the past two fiscal years was as follows:

	(Metric tons) 1927-28	1928-29
Coal	26,454,510	27,241,990
Coke	9,414,848	9,604,032
Pig iron	6,518,682	6,007,739
Raw steel	6,945,186	6,419,796
	(Marks)	
Domestic sales	958,101,560	904,320,000
Foreign sales	479,585,532	529,038,000

These figures reflect the growing importance of foreign trade, although it is rather surprising to see that for the quarter ended Sept. 30 this year exports of the United Steel Works Co. registered a slight decrease for the first time, while domestic sales further advanced. It is not believed, however, that this tendency will be maintained.

However uninteresting export business may be at present, the domestic market is not less dull, although some fair foreign orders could be booked. The Port of Le Havre authority has ordered five bridges from Krupp's and the A. G. fur Eisenkonstruktion & Bruckenbau. The Good Hope Co. has booked an order for erection of a steel plant and rolling mill near Angora.

French Steel Industry Foresees Crisis; Low Prices Now Acceptable

Office of IRON TRADE REVIEW,
9 Rue de Londres

Franc—3.91c

PARIS, Oct. 18.—(*European Staff Service*)—Lack of business continues in the French export marand it is reported that prices are falling so seriously that some Belgian rolling mills are ceasing operations. In France this situation begins to influence the home market ,as works prefer to grant important rebates on normal prices rather than accept export orders at prices now quoted. Indeed, some signs of a crisis are beginning to appear, this constituting the most serious characteristic of the past fortnight, as previously it was impossible to discover precursory signs of a crisis; in fact, some bankruptcies are signalled, and many prorogations of payment are wanted by consumers. On the other hand, building construction is active, and the Loucheur bill is beginning to be actively applied.

Some time back producers tried to increase prices of those orders for which the time of delivery was extended beyond February, to cover the increase in coal prices and the cost of new social welfare charges, but this policy now is modified, and mills are doing their utmost to book orders at prevailing prices without taking account of the time of delivery.

Domestic demand for foundry pig iron is much more active than in August and September. Activity remains brisk in all branches of the foundry trade. During this week meetings of the various combines have been held. No changes have been made in quotations, but the general feeling was one of uncertainty in regard to the market. It was stated that there will be no change in the condition of the export market as long as the renewal of the Stahlwerksverband is definitely settled. For wire rod the prevailing price of 850 francs f.o.t. Thionville has been maintained for January delivery. This quotation has remained unchanged since the beginning of the year.

The basis price for steel bars remains between 740 and 750 francs in the east, but important rebates are accepted for large and interesting orders. It is said that for concrete bars from 5 to 30 millimeters the normal price is from 690 to 700 francs. Large rounds and angles are sold at from 690 to 720 francs. For plates, 790 francs is the quotation in the east, and 810 to 820 francs in the north. The basis price of medium-sized sheets remains at 890 francs in the north. The prices of thin sheets have become weaker, as many consumers had accumulated stocks in anticipation of the constitution of a plate comptoir; prices are as follows: 1250 francs in the north and 1180 francs in the east. The wire products department is very unsatisfactory.

British Output Large

London, Oct. 15.—(*European Staff Service*)—Production of pig iron in September was less than in August, but larger than in September, 1928. September production included 208,500 tons of hematite, 284,700 tons of basic, 121,200 tons of foundry and 23,200 tons of forge pig iron.

The September output of steel ingots and castings was largest of the year, except March. The following table gives figures for the first nine months of 1929 as compared with the monthly averages of the three preceding years and 1913, in gross tons:

Mon. ave.	Act. Fur. on last day	Pig iron	Steel ingots and castings
1913	*338	855,000	638,600
1926	78	204,800	299,700
1927	149	607,700	758,100
1928	132	550,900	710,400
1929			
Jan.	139	563,900	764,600
Feb.	140	519,600	774,900
March	145	590,500	859,900
April	152	611,300	808,600
May	159	654,800	840,400
June	165	657,800	830,900
July	167	671,900	804,800
August	170	682,000	753,300
Sept.	168	664,600	847,900

*Average for year.

Here and There in Industry

Timely Information Which Records Developments in Various Lines of Productive Enterprise

SNAP-ON WRENCH CO., 1270 South Pierce street, Milwaukee, manufacturer of mechanics' tools and other specialties, will move its plant and headquarters to Kenosha, Wis. A new manufacturing plant costing about $150,000, with an additional investment of $125,000 in equipment, will be erected immediately and is to be ready by Jan. 1. The contract for the new plant has been awarded to Frank D. Chase Inc., 720 North Michigan avenue, Chicago. The Snap-On company was established nine years ago by Joseph Johnson and William Seideman, who also formed the Blue Point Steel Co. to conduct the manufacturing activities, and the Motor Tool Specialty Co. to handle sales. The distribution office was established at 14 East Jackson boulevard in Chicago. All of the activities will now be concentrated in Kenosha. Stanton Palmer is president, Newton Tarbell vice president, Joseph Johnson vice president and treasurer, and William Seideman secretary.

* * *

HACKETT MACHINE CO., Bangor, Me., is planning to move into a new building now under construction.

* * *

WRIGHT & CORSON CO., manufacturer of rivets and automatic riveting machines, has opened a new plant at Milford, Conn., with 60 employes.

* * *

BALL & ROLLER BEARING CO., Danbury, Conn., has purchased property adjoining its plant and has plans for enlarging its manufacturing facilities.

* * *

LEVENE MOTORS CO., Philadelphia, has purchased the marine engine business of the Fay & Bowen Co., Geneva, N. Y. The latter corporation is now in receivership. The sale does not include the plant.

* * *

FIRE KING STOKER CO., Indianapolis, has bought the heavy duty division of the Dayton Stoker Co. and will move its equipment to Indianapolis. This will allow the purchaser to enter the commercial field, its product previously having been confined to domestic equipment. T. Hopewell is general manager.

* * *

ROCKFORD DIE & TOOL WORKS, Rockford, Ill., formerly a partnership of C. A. Dahlgren and J. R. Jernberg, has been incorporated with $75,000 capital. It manufactures tools, dies and special machinery.

* * *

ECLIPSE LUBRICATOR CO., manufacturer of lubricating devices, announces removal of its plant and offices from Portland, Oreg., to Wichita Falls, Tex. W. H. Street is general manager.

* * *

DU BOIS MACHINE & ENGINEERING WORKS, Tulsa, Okla., V. L. DuBois, manager, has opened a machine shop at 820 East First place for manufacture of pumps and general repair work.

* * *

SCULLIN STEEL CO., St. Louis, has received an order for steel for 3500 freight cars ordered of the American Car & Foundry Co. by the Southern railroad. The contract involves approximately $750,000.

* * *

TIFFANY ALUMINUM PRODUCTS CO., St. Louis, has acquired a new plant building at Branch and Buchanan streets and will move its foundry and offices from the former location about November 1. Lee Rosenberg is president.

* * *

INTERNATIONAL DERRICK & EQUIPMENT CO., Houston, Tex., has acquired a site on Crosby road for a structural steel fabricating plant. Plant of Galvanizing & Plating Co., a subsidiary, will be moved to the new site.

* * *

GARDNER MOTOR CO., St. Louis, has authorized an increase of $1,000,000 in common stock. Common stock has been raised from 300,000 to 500,000 shares of a par value of $5 per share. The stockholders voted also to extend powers of the company permitting it to engage in the manufacture of other means of transportation. The aviation division was recently merged with the Detroit Aircraft Corp., of which the Ryan and Parks aircraft companies are divisions.

* * *

INCA MFG. CORP., Fort Wayne, Ind., has completed its first unit and will start production at once. The plant is 200 x 300 feet, on a tract of 11 acres. George A. Jacobs is president, W. C. Glass vice president and George W. Spindler secretary-treasurer.

* * *

WROUGHT WASHER MFG. CO., 46-54 South Bay street, Milwaukee, has purchased the former plant of the Beaver Motor Mfg. Co. at Oklahoma and First avenues, from the Filer & Stowell Co. The property consists of 16 acres, with a main building, 250 x 450 feet, affording 150,000 square feet of manufacturing space.

* * *

HIGH POINT MACHINE & MFG. CO., High Point, N. C., has been organized with $100,000 capital and has bought the plant and equipment of the High Point Machine Works. Some new equipment has been added to that already in the plant. The company will produce gray iron, brass and aluminum castings, do general machine shop work and build special machinery.

* * *

GLANCY MALLEABLE CORP., Waukesha, Wis., is preparing to occupy its new foundry unit about Nov. 15. It will contain a new 30-ton melting furnace, with a 60-foot stack. A new shipping room will be ready about the time the furnace will go into operation. Other changes will be made so that the company may be ready Jan. 1 to start a new and larger program of manufacture.

* * *

MULLINS MFG. CO., Salem, O., has added a complete porcelain enameling department, including an electrically heated continuous type enameling furnace. It was installed by the Ferro Enamel Supply Co., Cleveland. The same company is placing a porcelain enameling plant at the works of the Century Stove Co., Johnstown, Pa. Goodrich Electric Co., Chicago, is installing a sign enameling department under supervision of the same company. Canton

Stamping & Enameling Co., Canton, O., is having the Ferro Enamel company erect a continuous porcelain enameling furnace, the second in this plant, with a combined capacity of 9500 pieces of ware per hour.

* * *

BY-PRODUCTS RECOVERIES CO. INC., New York, manufacturer of dust collectors, has opened an office at 608 South Dearborn street, Chicago, with Frank Trott in charge.

* * *

INGERSOLL-RAND CO., New York, has been given an order by Ford Motor Co. for a 600-horsepower and a 300-horsepower oil-electric locomotive, with General Electric equipment.

* * *

VAN SICKLEN CORP., Chicago, subsidiary of Allied Motor Industries Inc., has taken over the stock of the Lorraine Corp., manufacturer of automobile spotlights, the purchase entailing no public financing.

* * *

ROSENFELDER MACHINERY CO., Post-Dispatch building, Houston, Tex., has increased capital to $40,000 to provide for expansion of its facilities for jobbing machine tools and shop equipment.

* * *

ELECTRIC ARC CUTTING & WELDING CO., Newark, N. J., announces appointment of Paul G. Bentley Co., 1018 Allen building, Dallas, Tex., as its southwestern representative.

* * *

GARDNER-DENVER CO., Quincy, Ill., has announced plans for a branch warehouse and sales office at Tulsa, Okla., to serve southwestern territory. Frank Ward will be in charge as district manager.

* * *

STRUTHERS-WELLS CO., Warren, Pa., manufacturer of tankage and steel plate equipment, has opened a district engineering office at 503 Exchange National Bank building, Tulsa, Okla. C. B. Lynde is engineer in charge.

* * *

CHAIN BELT CO., Milwaukee, will take over the foreign distribution of steel masts and towers manufactured by the Archer Iron Works, Chicago. The purpose of adding the Archer line is to round out the company's service to contractors, officials stated.

* * *

CHAIN BELT CO., Milwaukee, has opened a district office at 950 Park square, Boston, to cover New England. J. K. Merwin is district manager. He has been employed by the company at its Milwaukee plants and later by the Stearns Conveyor Co., Cleveland, a subsidiary.

* * *

A. D. DARRAGH & CO., 17 Battery Place, New York, has been formed by Alexander D. Darragh to specialize in corrosion and heat resisting alloys. Mr. Darragh has been connected with the Carnegie Steel Co., the Consolidated Steel Corp. and the Ludlum Steel Co.

* * *

PISTON RING CASTING INC., St. Louis, Henry Haacke president, has been organized for the manufacture of piston ring castings. Plans call for the employment of 80 persons and 100,000 castings will be produced daily. Equipment and machinery investment represents $90,000.

* * *

HELGERSON FOUNDRY CO., Green Bay, Wis., which was bought several months ago by Wisconsin Foundries Inc., will be operated under the name of the latter with production limited to gray iron castings. The Helgerson plant has been reconditioned and re-equipped and is in production in charge of S. J. Campbell.

* * *

PEDEN IRON & STEEL CO., Houston, Tex., has changed its name to Peden Co. and added E. G. Edson and V. L. Keith, former officials of Wilson Hardware Co., which it recently acquired, to the new board of directors. Capital stock structure was changed to provide for no par value of shares and issue of preferred stock was authorized.

* * *

THOMSON ELECTRIC WELDING CO., Lynn, Mass., and Gibb Welding Machines Co., Bay City, Mich., have been consolidated under the name Thomson-Gibb Electric Welding Co., both plants continuing in operation. A welding engineering service is to be developed with service stations in important centers to insure maximum production by all machines made by the company.

* * *

PITTMAN & SQUIRES, San Francisco and Los Angeles has been formed by Frank Pittman and G. F. Squires and has been appointed California representative for the Gulf States Steel Co. and the Central Iron & Steel Co. Mr. Pittman has been connected with C. W. Pike Co. for many years. The firm has opened offices in the Western Mutual Life building, Los Angeles. Mr. Squires was also associated with the C. W. Pike Co. for some years and later resigned to become sales manager of the Pacific Sheet Steel Co. He has opened offices at 39 Natoma street, San Francisco.

* * *

HURLEY MACHINE CO., Chicago, manufacturer of washing and ironing machines and electric appliances, will complete its expansion program soon with the operation of its new foundry unit, where cast gray iron and aluminum parts for Thor electrical appliances will be produced. Approximately 50,000 additional square feet or floor space has been made available in the new structure. The company is a subsidiary of the Electric Household Utilities Co.

Plate Orders Increase

Washington, Oct. 29.—September orders for fabricated plates increased slightly over August and also topped September, 1928, according to the department of commerce. A comparison of the totals for the nine months, compared with the same period last year shows a decided gain. Monthly comparisons follow:

	Total	Oil storage tanks	Gas holders	Blast furnaces	Stacks and miscellaneous
1928					
September	40,281	18,572	1,642	386	13,976
Total (9 mos.)	383,968	171,270	25,565	4,980	141,065
October	53,983	23,960	1,861	2,435	17,480
November	54,418	32,381	2,081	563	10,731
December	40,441	15,152	2,216	336	12,840
Total (year)	532,810	242,763	31,723	8,314	182,116
1929					
January	32,705	11,055	2,018	325	11,567
February	58,684	16,093	6,356	95	18,468
March	57,869	22,045	5,656	631	15,274
April	40,675	9,984	2,483	2,462	23,167
May	47,763	10,087	5,300	1,245	26,118
June	45,918	6,890	5,444	1,003	26,200
July	48,968	14,963	5,352	2,650	20,988
August	*39,702	*11,150	3,817	*115	*19,341
September	40,432	14,991	3,353	200	15,100
Total (9 mos.)	412,716	117,258	39,279	8,726	176,223

*Revised.

Corp. Lists Products

United States Steel Corp. has published a booklet listing the products and publications of its subsidiary manufacturing companies. This is done because of the varied and extensive products and services of these subsidiaries, which may be little known to many who are familiar with a few products.

The book gives an adequate and intelligent picture of the scope, character of products and service to customers of all the manufacturing companies in this group.

The blast furnace was gradually developed in Germany during the first half of the fifteenth century, and with this development came the use of cast iron.

Machinery

Buying Shrinks Moderately, but Tool Building Plants Are Busy—Deliveries Show Some Improvement—Inquiry Remains Fair

SOME spottiness is beginning to appear in the buying of machine tools and shop equipment. In nearly all eastern markets the volume in October has been less than in September, but considerably better than in the corresponding month one year ago. Reports from one market in the Middle West show orders to be well below the total of October, 1928. General opinion is that the tool building industry is facing a moderate recession during the next few months. Deliveries are somewhat easier, as is to be expected, but plants still are well occupied and on some lines unable to give delivery before two or three months. Despite this situation, one manufacturer of lathes announces a 5 per cent price increase, effective Nov. 1.

New York, Oct. 29.—Machine tool buying has slowed up somewhat following the recent spurt. October showed an increase over last year, however, and also was a slightly better month with most dealers than September. Deliveries show little improvement and prices are unchanged. Demand continues to be well spread with electrical and aviation interests being steady buyers. There is generally an absence of large lists, sales being confined generally to one or two units. The spurt which followed the Cleveland show has not held with some dealers. Builders are operating overtime in several instances and are making some progress toward reducing backlogs. Used tools are fairly active and demand for parts holds well.

Worcester, Mass., Oct. 29.—Grinders continue to lead the way in the machinery field, this month's output outstripping the record for three month's past, with a lively demand from foreign markets supplementing domestic orders. Many New England buyers are in the market for lathes and drills but delivery conditions remain unfavorable. Some types of millers cannot be promised for from two to three months but on other lines some improvement is being made. Speculation is divided as to how much effect the stock market debacle will have on the machinery market. Its effect, if any, however, will not be noticeable for several months, according to the best opinion.

Pittsburgh, Oct. 29.—Machine tool sales hold to a larger volume than was true a year ago, with inquiry holding well to the rate of awards. Considerable pending business has been removed during the past 30 days, but a fairly large number of items remain to be placed. Tools on inquiry for railroads are light but other pending business is well distributed over miscellaneous buyers. Lists for the Aluminum Co. of America and Republic Iron & Steel Co. remain to be placed, while Westinghouse Electric & Mfg. Co. still has a number of tools on its fourth quarter list.

Chicago, Oct. 29.—Machine tool sales remain slow and inquiries are disappointing. While the October volume may not fall far below September, some houses report a probable decline of 35 per cent or more from October, 1928, when the machine tool market in this territory was spirited. It is believed here that the stock market slumps will not have serious adverse effect. Some views are that more surplus funds of some of the smaller equipment buyers now may be diverted to new equipment purchases. Announcement is made that one line of lathes will be advanced 5 per cent in price, effective Nov. 1. Northern Pacific railroad purchased a 24-inch shaper in this market, and Chicago, Burlington & Quincy is in the market for a 1500-ton hydraulic press for reshaping angles. Tool and die and sheet metalworking shops are leading in current purchases, and one or two of the radio receiver manufacturers will be in the market for more equipment soon. Western Electric Co. will buy additional equipment for outside manufacturing operations. It is understood A. O. Smith Corp., Milwaukee, will be in the market for a horizontal drilling machine

Cleveland, Oct. 29.—Machine tool activity, although continuing to be slack compared with September, is picking up with some dealers. Deliveries are reported to be improving steadily but still deferred on most items. Purchases of the Amtorg Trading Corp., New York, agents for the Soviet Union, furnish a live topic of conversation in this territory. One builder reports the placing of about 25 turret lathes of all sizes for the Leningrad tractor plant project. A Toledo, O., press manufacturer is working on a number of presses for the same destination, the value of this booking said to be $690,000. Whether payment will be as prompt as the orders are stupendous is another question, according to some authorities. Prices continue firm.

Will Try Co-operative Manufacturing Plan

TO perfect a co-operative manufacturing plan with machine tool companies abroad, H. B. Kraut, president and chairman of the board, Giddings & Lewis Machine Tool Co., Fond du Lac, Wis., and K. F. Gallimore, chief engineer of the same company, recently sailed for Europe. The plan contemplates the shipping of machine tool parts to Europe, to be assembled in German plants and then turned over to the Fond du Lac company's European agents for delivery to customers. Contracts also may be made to have the German shops manufacture the heavier parts, such as beds and tables, from patterns supplied by the Giddings & Lewis company. It is expected that a material saving will be effected, not only in freight charges, but tariff imposts, by shipping the lighter and more intricate parts, rather than the complete machines in expensive export crates. The Giddings & Lewis company manufactures horizontal boring, milling and drilling machines exclusively. Mr. Kraut is a native of Germany, a graduate of the Munich Institute of Technology, and came to the United States in 1906. *He was associated with Joseph T. Ryerson & Son Inc., Chicago, for* 16 *years, having supervision of foreign sales and traveling extensively abroad.*

Reduces River Rates

Reduction of rates on inland river shipments of commodities, including iron and steel articles, have been announced by the American Barge Line, Pittsburgh, effective Dec. 1. As of that date through rates will be in effect from the Pittsburgh district to West Louisiana, Texas, Oklahoma and Arkansas. A net saving of $2.20 per net ton over the present all-rail is claimed. The barge line is to publish a Pittsburgh terminal tariff absorbing switching and barge loading charges.

Zenith Given Rebate

Washington, Oct. 29.—The bureau of internal revenue has announced rebate to the Zenith Furnace Co., Duluth, Minn., amounting to $24,085.03, for overpayment of income and excess profits taxes for the year ended April 30, 1921.

World Engineers To Join in Anniversary

Sixteen of the world's outstanding engineers will present papers at the celebration of the fiftieth anniversary of the founding of the American Society of Mechanical Engineers in Washington, April 7 and 8. Other commemorative exercises will be held in New York and Hoboken, N. J., April 5, 7, 8 and 9. Exercises will be primarily of a nontechnical nature, stressing the humanistic side of engineering. They will be in sum an exchange of greetings between nations through the medium of a series of papers presented by a prominent engineer from each of 16 countries or geographical divisions of the world. These papers will develop the theme of what engineering has done for each author's country in a national sense and also for the advancement of world culture and civilization. These engineers also will endeavor to forecast the lines along which engineering may be expected to develop in the future and to inform the convocation of some of the great engineering problems confronting their respective nations.

Industrial Exposition Being Arranged

Reduction of waste will be the keynote of exhibits at the National Industrial exposition to be held in Chicago, March 3-7, according to announcement received from exposition headquarters in Chicago. Labor saving machinery, materials handling equipment, new construction materials and designs, power transmission equipment and safety devices are a few of the industrial appliances and supplies which will be displayed at the show.

British Institute Forms Plans for Winter

The British Institute of Metals has issued its program for the winter season. It includes over 40 meetings to be held in metallurgical centers throughout England, Scotland and Wales. Programs of the various local sections have been drawn up to meet the needs of local industries. The subjects dealt with are of an essentially practical character, including papers on metals in aircraft construction, metal melting by electricity, chromium plating, difficulties in aluminum alloy founding and their remedies, electric heat-treating furnaces, and the effect of certain impurities in copper. Copies of the various programs can be obtained on application to the secretary, G. Shaw Scott, 36 Victoria street, Westminster, London, S.W.1.

Urge Change in Testing Insulating Materials

Definite recommendations relative to the method of testing molded insulating materials have been found advisable by the American Society for Testing Materials. Consequently, committee D-9 has prepared and published a 176-page booklet discussing this subject in detail. Changes suggested refer particularly to tension testing, as applicable to hot-molding compounds, but not to silicate cold-molding compounds. They also refer to the dielectric strength specimen. The booklet is available at $1.00 per copy from the society's headquarters, 1315 Spruce street, Philadelphia.

Southern Metal Trades Elects Officers

John S. Schofield, J. S. Schofield's Sons Co., Macon, Ga., was elected president of the Southern Metal Trades association at the eleventh annual convention held at Knoxville, Tenn., Oct. 16 and 17. To occupy the vice presidency of the organization, the association elected Paul R. Moore, comptroller, Columbus Iron Works Co., Columbus, Ga. W. G. Mealor, Gainesville Iron Works, Gainesville, Ga., was re-elected treasurer and William E. Dunn Jr., Atlanta, was re-elected secretary. Delegates from all centers of the South attended the convention. The subject of "Costs" was discussed at length by Mr. Moore.

Convention Calendar

Nov. 5-6—American Institute of Mining and Metallurgical Engineers. Meeting of open-hearth superintendents' committee at Stevens hotel, Chicago. L. F. Reinartz, American Rolling Mill Co., Middletown, O., is chairman of the committee.

Nov. 13-15—International Acetylene association. Annual convention at Congress hotel, Chicago. A. Cressy Morrison, 30 East Forty-second street, New York, is secretary.

Nov. 13-16—American Institute of Steel Construction. Annual convention at Edgewater Gulf hotel, Biloxi, Miss. Charles F. Abbott, 200 Madison avenue, New York, is executive director.

Nov. 19—Foundry Equipment Manufacturers association. Fall meeting in New York. H. W. Standart, Northern Engineering Works, Detroit, is president.

Nov. 20-21—National Founders' association. Thirty-third annual convention at Hotel Astor, New York, J. M. Taylor, 29 South LaSalle street, Chicago, is secretary.

Supplement to Book of Standards Issued

Copies of the 1929 supplement to the 1927 edition of the book of standards, a triennial publication issued by the American Society for Testing Materals, now are available from the office of the society at 1315 Spruce street, Philadelphia. This is the second supplement to the 1927 edition and contains 19 revised and 32 newly adopted standards, approved by letter ballot Sept. 3. The standards relating to metals and those relating to nonmetallis materials appear in the one pamphlet.

The booklet is thus supplementary to both part 1 and 2, metals and nonmetals, respectively, of the book of standards. It is so arranged, however, that if anyone wishes to separate from the pamphlet those standards supplementing but one part of the book of standards, this separation can be accomplished easily. The pamphlet contains 293 pages and is being sold at $1.50 per copy.

To Revise Cap and Set Screw Standards

Standard dimensions for socket head cap and set screws will be developed further by subcommittee 9 of the sectional committee on bolt, nut and rivet proportions of the American Society of Mechanical Engineers, at a meeting in the Engineering Societies building, New York, Oct. 18. The subcommittee plans to develop its proposed American standard by the incorporation of dimensions for elements not previously covered. Copies of the revised draft will be transmitted to the industry for general criticism and comment.

Advance Plans for World Power Conference

An extensive program of papers dealing with the economic and financial problems involved in the generation, distribution and utilization of power is being arranged for presentation and discussion at the World Power conference to be held in Berlin, June 16-25, 1930. The American committee, with headquarters at 29 West Thirty-ninth street, New York, has formulated the program which was closed Oct. 21 and it is expected that general reports of all papers will be available in French, German and English well in advance of the conference.

CONSTRUCTION and ENTERPRISE

Concise Timely Business Building Opportunities from Field of Industry

North Atlantic

BRIDGEPORT, CONN.—J. J. Scully, 592 Shelton street, will soon let contracts for a 3-story building, 50 x 100 feet, to be used for a laboratory for developing talking machine equipment.

BRIDGEPORT, CONN.—Cochrane Chevrolet Co., 1710 North Main street, has plans for a 3-story service and sales station, 60 x 100 feet, estimated to cost about $80,000. Fletcher-Thompson Inc., Fairfield avenue, architect.

WATERBURY, CONN.—Connecticut Light & Power Co., West Main street, has plans for a substation on Baldwin street to cost about $40,000.

WILMINGTON, DEL.—Hercules Powder Co., Delaware Trust building, has plans for a chemical laboratory, including a power house, to be built on Lancaster pike.

BALTIMORE—United Railways & Electric Co. of Baltimore, Continental building, auto maintenance department, will take bids for the construction of a one and 2-story garage after Jan. 1. Estimated cost about $300,000.

BOSTON—Boston & Albany railroad, South station, G. A. Kirley, chief engineer, has plans for a power house including two 450-horsepower boilers. Estimated cost about $225,000.

MALDEN, MASS.—W. E. Arnold Co., 17 Center street, awarded a contract for a 1-story machine shop, 60 x 100 feet, to L. Antico, 21 Rock Glen road, Medford, Mass., estimated to cost about $40,000.

TURNERS FALLS, MASS. — Turners Falls Power & Electric Co. awarded a contract for the Cobble Mountain power plant to D. O'Connell's Sons Inc., 480 Hampden street, Holyoke, Mass.

ANNANDALE, N. J.—Annandale Graphite Co. is having plans prepared for the construction of a one and 2-story plant addition estimated to cost about $100,000.

JERSEY CITY, N. J.—New Jersey Art Foundry, 433 Tonnele avenue, awarded a contract for a one and 2-story foundry addition to Frank Crabay, 3572 Boulevard. (Noted Oct. 3.)

NEWARK, N. J.—R. Bolton, architect, 45 Branford place, is taking bids for a 1-story and basement boiler house for the United Color & Pigment Co. Inc., Evergreen avenue. Estimated cost about $40,000.

NEWARK, N. J.—Tung Sol Lamp Works Inc., 95 Eighth avenue, will take bids about Nov. 1 through Fougner & Gautier, architects, 103 Park avenue, New York, for a 4-story building, 100 x 140 feet. (Noted Aug. 1.)

BUFFALO—Stewart Motor Co., 93 Dewey avenue, awarded a contract for a service building, 25 x 97 feet, to R. E. Williams, Jackson building, to cost about $64,000. (Noted Aug. 8.)

NEW YORK—Topping Bros., 159 Varick street, jobbers and exporters of heavy hardware and railroad supplies, are making alterations and addition estimated to cost about $300,000.

NEW YORK—Third Avenue railroad Co., 2396 Third avenue, awarded a contract for a 2-story bus repair shop addition on West Farms road to J. D. Clermont, 145 East Forty-fifth street. (Noted Sept. 19.)

BELLEFONTE, PA.—Sutton Engineering Co. has plans for the construction of a machine shop addition, 55 x 68 feet. A 50-ton electric crane will be included in the equipment for the proposed addition.

ERIE, PA.—General Electric Co., Schenectady, N. Y., has awarded a contract for an alloy foundry at its plant here to E. E. Austin & Sons, 1919 Reed street. (Noted Sept. 26.)

McKEES ROCKS, PA.—Pressed Steel Car Co., Farmers Bank building, Pittsburgh, awarded contracts for foundry additions to its plant here.

McKEES ROCKS, PA.—U. S. Chain & Forging Co., care F. A. Bond, general manager, Union Trust building, Pittsburgh, is said to have plans for the construction of a plant addtion.

NEVILLE, ISLAND, PA.—Manufacturers Light & Heat Co., Farmers Bank building, Pittsburgh, awarded a contract for a 1-story compressor station, 36 x 155 feet, to the Nicola Building Co., 127 North Highland avenue, Pittsburgh. (Noted Sept. 12.)

PHILADELPHIA—Mack Machine Co. of Penna. Inc., 1708 North Front street, has leased the first floor and basement to be used for an assembly plant.

PHILADELPHIA—Morris, Wheeler & Co. Inc., Thirtieth and Locust streets, has plans completed for the construction of a steel fabricating plant at Fox street and Roberts avenue, on a site 240 x 420 feet.

PITTSBURGH—Manchester Auto & Machine Co., 916 Manchester boulevard, has plans for the construction of a 1-story garage and service station.

SAFE HARBOR, PA.—Pennsylvania Water & Power Co., 60 Wall street, New York, will begin construction next spring of a hydroelectric development here estimated to cost approximately $30,000,000.

TARENTUM, PA.—Tarentum Steel Corp., recently incorporated, expects to require about eight months to remodel the old No. 2 plant of the Pittsburgh Plate Glass Co. for the manufacture of products for automobile construction. Frank C. Irvine, 128 East Eighth street, is treasurer. (Noted Aug. 15.)

TITUSVILLE, PA.—Rainey Bros. Tool Co., Grove City, Pa., manufacturer of precision tools and automobile equipment, has acquired a plant building here, for increased manufacturing facilities and will move its plant about Nov. 1.

East Central

CHICAGO—Peoples Gas Light & Coke Co., 122 South Michigan avenue, has been issued a permit for the construction of a 2-story compressor station, 58 x 68 feet, at 9701 Baltimore avenue.

CHICAGO—Borg & Beck Co., 6558 South Menard street, manufacturer of automobile clutches, has awarded a contract for a 3-story plant addition which will provide about 40,000 square feet of additional floor space.

CHICAGO—Chicago union station, 506 South Canal street, has been issued a permit for the construction of a 2-story addition, 47 x 69 feet, to the power house. Graham, Anderson, Probst & White, Railway Exchange building, are architects.

WAUKEGAN, ILL.—Johnson Motor Co., 3195 Pershing road, manufacturer of outboard motors, has construction under way of a plant addition estimated to cost about $100,000 with equipment.

HARTFORD CITY, IND.—Overhead Door

Corp. advises it is completing a 1-story addition, 60 x 139 feet, to be used for experimental and engineering purposes. The amount of machinery and equipment required has not been decided. (Noted Oct. 24.)

INDIANAPOLIS—Lilly Varnish Co., 670 South California street, has awarded a contract for the construction of a 1-story grinding addition estimated to cost about $35,000.

SOUTH BEND, IND.—The plant of the Hurwich Iron Co. was recently damaged by fire started from an oil burning metal furnace. Loss may reach $40,000.

TERRE HAUTE, IND.—Highland Iron & Steel Co. contemplates the construction of a 1-story addition, 120 x 400 feet, to be used for producing wrought iron window frame sections. It is thought that construction of the new mill will probably be started next spring.

DETROIT—Otis Steel Co., General Motors building, contemplates the construction of a one and 2-story warehouse building.

DETROIT—Detroit Transfer Co., 1720 West Twelfth street, has awarded a contract for the construction of a ramp garage on Twelfth street to the Butler Construction Co. Estimated cost about $150,000.

DETROIT—White Star Refining Co., 903 West Grand boulevard, has construction under way of a lubrication oil plant on Avery avenue. A garage, storage plant and sign shop is also being built at Mt. Elliott and Charles avenues.

GREENVILLE, MICH.—Consolidated Soda Fountain Corp., formerly the Consolidated Cabinet Corp., manufacturer of electrically refrigerated soda fountains and equipment, will use a building formerly occupied by the Taplin Furnace Co. as well as a newly constructed unit. Machinery will be installed soon and it is expected that production will be under way by Jan. 1.

MARYSVILLE, MICH.—Gar Wood Inc., Algonac, Mich., manufacturer of speed boats, will move its plant here where a new plant will be constructed which will contain about 60,000 square feet of floor space. Two plant buildings, one 70 x 550 feet and one 70 x 350 feet will be completed before Feb. 1. (Noted Oct. 10.)

MT. CLEMENS, MICH.—Copeland Products Inc., 630 Lycaste avenue, Detroit, manufacturer of iceless refrigerators, has awarded a contract for remodeling a building here formerly occupied by the National Candy Co.

MT. CLEMENS, MICH.—Robey Speed-Aire Mfg. Co., Detroit, which recently established offices in the Citizens National Bank building, Romeo, Mich., has moved here, where it proposes to erect buildings for manufacturing airplanes and establish an airport.

MUSKEGON, MICH.—Fitzjohn Mfg. Co., manufacturer of auto bodies, will soon start construction of a plant addition which will contain about 18,000 square feet of floor space.

MUSKEGON, MICH.—Muskegon Traction & Lighting Co. is receiving bids for foundations for a gas holder estimated to cost about $150,000. Approximately $120,000 will also be spent on the water gas plant of the company.

MUSKEGON, MICH.—Vento Steel Sash Co., Sixth street, awarded a contract for the construction of a 1-story plant addition, 60 x 130 feet, to the Buck Construction Co., 333 Weston avenue. Estimated cost about $75,000. (Noted Sept. 19.)

SOUTH HAVEN, MICH.—National Motor Castings Co. has construction under way of a plant addition, 40 x 240 feet, which will house sand handling equipment.

BARNESVILLE, O.—Ohio Power Co., Newark, O., has plans for the construction of a substation here to cost about $22,000, according to J. B. Roberts, local superintendent.

CINCINNATI—Procter & Gamble Co., Gwynne building, has been issued a permit for the construction of a boiler house estimated to cost about $45,000.

CINCINNATI—Hauser-Stander Tank Co., Spring Grove avenue, will soon award contract for a new plant on an 11-acre tract. Cost not stated.

CLEVELAND—Denby Wire & Iron Co., 3005 East Eighty-first street, has been issued a permit for an addition, 45 x 55 feet.

CLEVELAND—Rose Iron Works, 1536 East Forty-third street, has been issued a building permit for an addition, 32 x 58 feet.

CLEVELAND—Atlas Steel & Supply Co., 4401 Trumbull avenue, is having plans prepared for a warehouse, 80 x 120 feet, by Walter J. Wefel, architect, 5716 Euclid avenue. Architect also started to take bids about Oct. 26 for a crane runway, 55 x 200 feet.

CLEVELAND—Shattuck & Layer, 134 North LaSalle street, Chicago, are taking bids for the construction of a service station, boiler house, 100 x 115 feet, and a repair shop, 27 x 256 feet, at 7404 Euclid avenue for the Automobile Corp. of America. (Noted Aug. 1.)

DAYTON, O.—Edgemont Iron & Metal Co. has construction of a warehouse under way at 554 Pontiac street.

NEW PHILADELPHIA, O.—Chamber of commerce recently sponsored a dinner at which plans were outlined for establishing a new steel plant estimated to cost about $1,000,000. John H. Reiser president of the chamber of commerce, presided.

TOLEDO, O.—City Machine & Tool Co., Toledo Factories building, has taken an option on a 30-acre tract on Westwood avenue as a site for a proposed new plant. (Noted Oct. 3.)

PORTAGE, WIS.—Wisconsin Utilities Mfg. Co. will build a 2-story plant here for the manufacture of metal specialties, according to the chamber of commerce. Work will be started immediately. Estimated cost $150,000.

PORT WASHINGTON, WIS.—Milwaukee Electric Railway & Light Co., a subsidiary of the North American Co., will build a steam electric generating plant here which will involve an initial expenditure of about $8,000,000.

WEST ALLIS, WIS.—Allis-Chalmers Mfg. Co. has plans for substantial expansion at its tractor plants here and Springfield, Ill.

Southern States

RUSSELLVILLE, ARK.—City voted $139,350 of bonds for the construction of a power plant. (Noted Sept. 26.)

LEXINGTON, KY.—Universal Steam Motors Inc., care John R. Humphrey, president, Guaranty Bank building, plans to establish a plant estimated to cost about $100,000 in 1930.

RICHMOND, VA.—American Tobacco Co., Twenty-sixth and Carey streets, has plans for an addition to its power plant which is estimated to cost about $80,000. C. H. Gibson is manager.

West Central

SIOUX CITY, IOWA—Kari-Keen Mfg. Co., East Seventh and Division streets, manufacturer of luggage carriers, awarded a contract for a 1-story plant addition, 88 x 286 feet, to W. A. Klinger Inc., Warnock building. (Noted Oct. 17.)

ELLIS, KANS.—City, care E. R. Gibson, clerk, has awarded a construction contract for a new power plant building estimated to cost about $68,000. Black & Veatch, Mutual building, Kansas City, Mo., are engineers.

SPRINGFIELD, MO.—Thomas Poultry Car Co., subsidiary of the North American Car Corp., 327 South Lasalle street, Chicago, plans to establish a plant here.

ST. LOUIS—Dubinsky Realty Co., Wainwright building, is receiving bids for a 1-story plant building for the St. Louis Spring Co., 3935 Washington avenue, lessee.

ST. LOUIS—Piston Ring Castings Inc., recently incorporated by Henry Haacke, 5544 Maze place, will spend about $90,000 for machinery and equipment for the manufacture of piston ring castings.

ST. LOUIS—Carter Carburetor Corp., 2838 North Spring avenue, awarded a contract for a 1-story addition, 42 x 45 feet, also a top addition to the Fruin-Colnon Contracting Co., Merchants Laclede building. Estimated cost about $40,000.

ST. LOUIS—St. Lukes hospital, 5535 Delmar boulevard, care Frank V. Hammar, president, awarded a contract for the construction of a

1-story power plant to the Gamble Construction Co., 620 Chestnut street. Estimated cost $100,000. (Noted Oct. 10.)

BEATRICE, NEBR.—State, care department of public works, State house, Lincoln, Nebr., will receive bids after Jan. 1 for a 3-story hospital and power house addition estimated to cost about $150,000.

Western States

PHOENIX, ARIZ.—Los Angeles Exploration & Mining Co. Ltd., care J. Van Daam, president and general manager, 1338 Laird avenue, Salt Lake City, Utah, has plans in progress for the construction of a reduction plant for the treatment of copper ores.

BANNING, CALIF.—Southern Sierras Power Co., 777 West Eighth street, Riverside, Calif., is having plans prepared for a substation and power line from here to Palm Springs, Calif. Estimated expenditure $100,000.

BERKELEY, CALIF.—University of California is having plans prepared for the construction of an engineering building including electrical and mechanical departments. G. W. Kelham, 315 Montgomery street, San Francisco, is architect.

CRESCENT CITY, CALIF.—Government, care public works officer, Twelfth naval district, 100 Harrison street, San Francisco, will receive bids until Nov. 6 for a power house, 18 x 25 feet.

FRUITVALE, CALIF.—United Filters Corp. is having plans prepared for a group of buildings here, by Reed & Corlett, architects, Oakland Bank of Savings, Oakland, Calif. (Noted May 2.)

HOLLYDALE, CALIF.—Woodlite Mfg. Co. manufacturer of automobile headlights, has started construction of a building, 150 x 300 feet, which with machinery will cost about $250,000.

LONG BEACH, CALIF.—Courier Monoplane Co. Inc., West First street, is negotiating with the city to provide a tract at the municipal airport upon which it will build a plant for increased manufacturing facilities.

LOS ANGELES—Aluminum Industries Inc., 2438 Beekman street, Cincinnati, is having plans prepared for the construction of a plant and warehouse here to cost about $40,000.

LOS ANGELES—Miller-Schofield Inc. of America, a new company formed by the merger of Harry A. Miller Inc., manufacturer of racing cars, and Schofield Inc. of America, mechanical engineers, will increase the Miller plant at 2652 Long Beach avenue, to care for a large increase in production.

FALLON, NEV.—City is having an estimate made for a municipal power plant which probably will exceed $100,000.

SALT LAKE CITY, UTAH—Utah Oil Co., care J. Howard, president, has plans for installing new stills, piping and accessories for oil refinery here. G. A. Finlayson is in charge. Estimated cost about $500,000.

TACOMA, WASH.—Atlas Foundry Co., 3012 South Wilkeson street, has obtained a permit for a plant building to replace one recently damaged by fire.

WENATCHEE, WASH.—Puget Sound Power & Light Co. has purchased a site on which it is proposed to soon erect a service building, concrete construction, 75 x 120 feet.

Canada

BURNABY, B. C.—Dominion Bridge Co., 275 West First avenue, Vancouver, has awarded contract to the E. J. Ryan Contracting Co., 5 Fairfield building, Vancouver, for the erection of a fabricating steel plant. The main shop will be one and a half stories, 210 x 800. (Noted Sept. 12.)

TORONTO, ONT.—Bids will be received until Nov. 5, by S. McBride, chairman of the board of control, city hall, for the supply and installation of a 10,000,000-gallon, centrifugal pump and motor at the Riverdale pumping station on Broadview avenue.

WATERLOO, ONT.—Waterloo Mfg. Co., and an agricultural implement manufacturing concern of Melbourne, Australia, are interested in a company to be formed for the purpose of locating a plant here for the manufacture of a new combine thresher. A large plant will be erected immediately.

HIGH FALLS, QUE.—McLaren Co., Buckingham, Que., has awarded subcontracts in connection with the $15,000,000 construction program for a power development plant and paper and sulphite mill here. R. D. Ferguson, New York, is engineer. General contractor is W. I. Bishop Ltd., 620 Cathcart street, Montreal. (Noted June 13.)

LEVIS, QUE.—S. E. O'Brien, secretary, department of public works, Ottawa, Ont., is receiving bids for the purchase and removal of the Levis railway shops.

REGINA, SASK.—Canadian Liquidair Co., Montreal, will build a $40,000 manufacturing plant here and is receiving bids.

Recent Incorporations

CHICAGO—American Seal Co., 1074 West Division street, has been incorporated with $20,000 capital to manufacture and sell locks, seals and sealing devices, by T. I. Underwood.

CHICAGO—Mont Clare Furnace Co., 6037 West Grand avenue, has been incorporated to engage in the sheet metal business, by Peder A. Ivn.

CHICAGO—P & S Mfg. Co., 180 North Wacker drive, has been incorporated with $10,000 capital and 1000 shares of no par common stock to manufacture and sell automobile accessories, appliances and devices, by Guilford R. Windes.

CHICAGO—No-Cord Electric Iron Co., 549 West Randolph street, has been incorporated with $100,000 capital to manufacture and sell irons, electric fixtures, etc., by Edward Greenstone.

AURORA, ILL.—Taylor Construction Co., 28 Fox street, has been incorporated with $40,000 of preferred and 500 shares of no par common stock to engage in the construction business, by J. Miller.

CHICAGO—Timing Devices Inc., room 820, 111 West Monroe street, has been incorporated with 100 shares of no par stock to manufacture coin-controlled devices for operation of radios, phonographs, etc., by M. T. Kraus.

CHICAGO—Universe Valve & Mfg. Co., 4236 Lincoln avenue, has been incorporated with 4000 shares of no par stock to manufacture and sell brass specialties. bath room fixtures and equipment, by William P. Sommer.

CHICAGO—Economy Equipment Co., 1310 North Cicero avenue, has been incorporated with 4000 shares of no par stock to manufacture and sell air conditioning and drying machinery and equipment, by Robert P. Aksel.

CHICAGO—Automatic Lathe & Tool Co., 2626 South Parkway, has been incorporated with 100 shares of no par stock to manufacture and deal in machinery, tools and automotive parts, by Leo. A. Parker.

CHICAGO—Domestic Stoker Co. of Illinois, 2623 West Adams street, has been incorporated with $2500 capital to manufacture and sell heating devices of all kinds, by Norman A. Miller.

CHICAGO—Peck Warren Mfg. Co. has been incorporated with $50,000 capital to manufacture and sell metal and wood novelties, by Dickinson, Smith, Farrell & Wham, 231 South LaSalle street.

CHICAGO—Temme Mfg. Co., 411 North Trumbull avenue, has been incorporated with $6000 capital to manufacture and sell electric alarms, supplies and machinery, by M. J. Marty.

CHICAGO—Bolton Mfg. Co. Inc., 105 West Monroe street, has been incorporated with $50,000 capital to manufacture automobile accessories, by Fred Bartunek. 105 West Monroe street.

CHICAGO—Johnson Bros. Engineering Co., 1419 Belle Plaine avenue, has been incorporated with 400 shares of no par stock to manufacture and sell machinery for production, conservation and application of heat and power, by Frank W. Marvin.

CHICAGO—Henkle Edge Lite Corp., 900 North Franklin street, has been incorporated with $150,000 of preferred and 1000 shares of no par stock to manufacture and sell metal

cabinets, electric and gas lighting fixtures, by Henry A. Best.

CHICAGO—Lovelock Smelting Co., room 604, 25 North Dearborn street, has been incorporated with $100,000 capital to engage in smelting and refining ores, by Francis G. Stewart.

INDIANAPOLIS—Journal Wedge Grinder Corp. has been incorporated with 1000 shares of no par stock to manufacture and sell machines, tools and appliances. Burrell Wright, 1512 Merchants Bank building, is one of the directors.

BOSTON—G. E. M. Equipment Corp. has been incorporated with 200,000 shares of no par stock to manufacture and deal in washing machines, ironers, etc. Herbert C. Splane, 8 Walnut street, Everett, Mass., is president.

NORTHAMPTON, MASS.—LaFleur Airport & Flying Service Inc: has been incorporated with $100,000 capital to manufacture aircraft and parts. William LaFleur, Northampton, is president and treasurer.

SALEM, MASS.—Forced Draught Heating Corp., 8 Gardner street, has been incorporated with $25,000 capital to manufacture and sell heating apparatus. Joseph Gay is president.

DETROIT—Lee-Troc Co., 120 Selden avenue, has been incorporated with 35,000 shares of no par stock to manufacture and sell spark plugs and other devices, by H. E. Adamson.

GRAND HAVEN, MICH.—Challenge Stamping & Porcelain Co. has been incorporated with $50,000 capital to apply enamel and deal in wood and metal products, by A. H. Ringelberg.

MACKINAC ISLAND, MICH.—Mackinac Island Power Co. has been incorporated with 1000 shares of no par stock to produce and supply power and electricity. E. J. Haugh, 100 West Monroe street, Chicago, is one of the incorporators.

CAMDEN, N. J.—Ridgley Grate Co. has been incorporated with 5000 shares of common stock to manufacture grates, by Wilfred B. Wolcott, Wilson building, Camden.

CRANFORD, N. J.—Tri Seal Corp. has been incorporated with 2500 shares of common stock to manufacture machinery, by C. K. Selles, 67 Fernwood terrace, Elizabeth, N. J.

JERSEY CITY, N. J.—Garve Construction Co. has been incorporated with $125,000 capital, by J. J. Kearney, 75 Montgomery street, Jersey City.

JERSEY CITY, N. J.—Bergoff-Shaw Corp. has been incorporated with 1000 shares of common stock to engage in the contracting business, by McDermott, Enright & Carpenter, 75 Montague street, Jersey City.

NEWARK, N. J.Super-Roll Mfg. Co. has been incorporated with 5000 shares of common stock to manufacture machinery, by Raymond H. Cohen, 60 Park place.

NEWARK, N. J.—National Signal Device Co. Inc. has been incorporated with 5000 shares of common stock to manufacture signals, by Samuel Levin, 60 Park place, Newark.

NEWARK, N. J.—Mechanical-Control Heat Service Inc. has been incorporated with 500 shares of common stock to manufacture heat regulators, by John M. Nolan, 577 Broadway, Paterson, N. J.

NEW BRUNSWICK, N. J.—Purdy & Hamilton Construction Co. has been incorporated with $125,000 capital to engage in the engineering and construction business, by Freeman Woodbridge, 390 George street, New Brunswick.'

TRENTON, N. J.—Duplex Brake Engineering Co. Inc. has been incorporated with 2500 shares of common stock for manufacturing purposes, by Scammel, Knight & Reese, Mechanics National Bank building.

BROOKLYN, N. Y.—Charco Mfg. Co., tools, has been incorporated with $25,000 of preferred and 200 shares of common stock, by M. S. Barnes, 160 Fifth avenue, New York.

BROOKLYN, N. Y.—Dasco Mfg. Corp., metals, has been incorporated with $5000 capital, by Kriger, Stutsky & Friedman, 217 Broadway New York.

NEW YORK—Dales Cylinder Grinding Co. has been incorporated with $10,000 capital, by A. Solomon, 1440 Broadway.

CANTON, O.—Central Pattern Works Inc. has been incorporated, by Herbruck, Shelter, Molehier & Roach, Renkert building.

New Trade Publications

ARC WELDING—Lincoln Electric Co., Cleveland, has issued a bulletin describing and illustrating construction of a steel swimming tank by welding, making it a one-piece job.

PIPE WELDING—Pittsburgh Valve Foundry & Construction Co., Pittsburgh, illustrates in a current bulletin its method of welding headers on pipe by an interlock neck, making for greater strength. Illustrations show the method.

DIAMOND CORE DRILLS—Sullivan Machinery Co., Chicago, has issued several bulletins on various types of its diamond core drills. They cover four types, driven by gasoline or electric motors or hand power. They are illustrated.

PIPE CORROSION PROTECTION—Lewis Asphalt Engineering Corp., New York, is distributing a reprint of an article on protecting pipe lines against corrosion, by A. Sanders, the corporation's research engineer.

ELECTRIC DRILLS AND GRINDERS—Hisey-Wolf Machine Co., Cincinnati, has issued a 48-page catalog covering its electric drills, grinders and buffers. It is illustrated and contains specification tables and full details.

INGOT IRON—American Rolling Mill Co., Middletown, O., has issued the third of its series of architectural rotogravures for 1929. It presents numerous fine buildings and tells of the use of sheet metal in them.

RADIAL DRILLS—United Machine Tool Corp., New York, is circulating a bulletin by Franz Braun Aktiengesellschaft, Zerbst, Germany, covering the latter's line of heavy duty radial drilling machines. It is illustrated and contains tables of data.

ROTARY DISPLACEMENT METERS—Connersville Blower Co., Connersville, Ind., has issued a bulletin presenting a variety of installations of its rotary displacement meters, to show the adaptability of this type of meter to various uses in the measurement of gases.

THREADING EQUIPMENT—Landis Machine Co., Waynesboro, Pa., is distributing the fourth edition of its handbook, covering detailed instructions for operation of its chasers, die heads and machines. Valuable information concerning thread tables and other data are given.

PORTABLE ELECTRIC TOOLS—Chicago Pneumatic Tool Co., New York, has issued a catalog of its portable electric tools. Illustrations present the tools and their applications, with color adding to their effectiveness. Specifications are furnished for each tool.

TRAMRAIL SCALES—Cleveland Electric Tramrail division of Cleveland Crane & Engineering Co., Wickliffe, O., has issued a bulletin, on its tramrail scales. They are designed to give accurate weights without rehandling materials. Illustrations of actual installations show a variety of applications.

STEEL FLOOR GRATING—Walter Bates Steel Corp., Gary, Ind., in a current bulletin presents its type of steel floor grating, assembled with a rigid mechanical tongue and groove joint. Illustrations show the method of assembly and typical installations. A table of safe loads and deflection is also given.

GAGES—Pratt & Whitney Co., division of Niles-Bement Pond Co., Hartford, Conn., has prepared and is distributing a book of 160 pages devoted to its gages, which it has been manufacturing for 60 years. It is more than a catalog and contains much information concerning gages and their use, constituting a ready reference book.

ACID-PROOF CEMENT—Quigley Furnace Specialties Co., New York, is distributing a 24-page booklet featuring its acid-proof cement, which is used for bonding acid-proof masonry in a number of industries. Some of these uses are in stack construction and in equipment handling hot acid gases. Methods of using the material are illustrated.

LATHES—Monarch Machine Tool Co., Sidney, O., has published a booklet covering installation and maintenance of lathes. It covers leveling, testing for accuracy, care and lubrication, methods of speed change, adjusting belt, tightening of packing glands, use of taper attachment and other points. Illustrations are close-up halftones.

ROOFDECK ERECTION DATA—Truscon Steel Co., Youngstown, O., has assembled much useful and practical information in its current booklet on erection data and specifications on Truscon ferroboard armco ingot iron roofdeck. It is designed for the practical roofer and roofing contractor, telling how to install it quickly and economically. Illustrations of various steps of the work convey the information definitely.

SAFETY APPLIANCES—Mine Safety Appliances Co., Pittsburgh, has issued a general catalog of its mine and industrial safety appliances. Illustrations cover a wide range, some being in colors. The catalog covers safety lamps, shot-firing devices, gas and air measuring devices, rock dusting equipment, oxygen apparatus, gas masks, gas detectors, resuscitation equipment, safety clothing and safety saws.

PIPE—Youngstown Sheet & Tube Co., Youngstown, O., has prepared a booklet on its tubular products, for special service to users. It contains general notes covering trade practices, marking of pipe and tables of various tubular products, giving data of dimensions and prices. A chapter is devoted to the process of manufacture, with illustrations from various departments of the works. Suggestions are given for care of oil country pipe. An index facilitates finding various facts.

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Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

½-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½

To large jobbers these discounts are increased by 1 point and supplementary discounts of 5 and 2½ per cent on black, and 1½ points and supplementary discounts of 5 and 2½ per cent on galvanized.

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLINGS

Butt Weld

	Black.	Galv.
¼ and ⅜-inch	+11	+36
½-inch	23	5
¾-inch	28	11
1 and 1¼-inch	31	15
1½ and 2-inch	35	18

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	9
2½ to 3½-inch	28	12
4 to 6-inch	30	17
7 and 8-inch	29	16
9 to 12-inch	26	11

REAMED AND DRIFTED

2-inch to 6-inch—Two points less than above

EXTRA STRONG, PLAIN ENDS

¼ and ⅜-inch	+13	+48
½-inch	23	7
¾-inch	28	12
1 to 2-inch	34	18

Lap Weld

2-inch	29	13
2½ to 4-inch	34	20
4½ to 6-inch	33	19
7 and 8-inch	31	17
9 to 12-inch	21	8

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½-inch	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	.....

Jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized wrought iron pipe.

On extra or double extra strong pipe fitted with threads and couplings basing discount lowered 5 points from plain end price. Fitted with threads only, basing discount lowered 3 points for random lengths.

Boiler Tubes

Pittsburgh carload discounts

STEEL (Lap Weld)

2 and 2¼-inch	38 off
2½ and 2¾-inch	46 off
3-inch	52 off
3¼ to 3¾-inch	54 off
4-inch	57 off
4½ to 6-inch	46 off

Subject to two 5 per cent discounts on full carload shipments. On less than 10,000 pounds, base discount reduced 6 points and one 5 per cent allowed. Over 10,000 pounds to carload, base discount reduced 4 points and two 5 per cents allowed.

CHARCOAL IRON

1½-inch	1 off
1¾-inch	8 off
2 and 2¼-inch	13 off
2½ and 2¾-inch	16 off
3-inch	17 off
3¼ to 3½-inch	18 off
4-inch	20 off
4½-inch	21 off

Subject to 10 per cent discount on full carload lots. On less than 10,000 pounds, base discount reduced 2 points and no preferential allowed. On 10,000 pounds to carload, 5 per cent preferential allowed.

SEAMLESS COLD DRAWN

1-inch	61 off
1¼ and 1½-inch	53 off
1¾-inch	37 off
2 and 2¼-inch	32 off
2½ and 2¾-inch	40 off
3-inch	46 off
3¼ and 3½-inch	48 off
4-inch	51 off
4½, 5 and 6-inch	40 off

SEAMLESS HOT ROLLED

1¾-inch	37 off
2 and 2¼-inch	38 off
2½ and 2¾-inch	46 off
3-inch	52 off
3¼ and 3½-inch	54 off
4-inch	57 off
4½, 5 and 6-inch	46 off

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed.

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.30 per cent.....50 to 55 off

Carbon 0.30 to 0.40 per cent.....45 to 50 off

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Outside diameter	Net prices per foot f.o.b. Pittsburgh Gage	Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅜-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for lengths over 24 feet.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, date Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weight.

Over 100 to and including 110 inches	.05c
Over 110 to and including 115 inches	.10c
Over 115 to and including 120 inches	.15c
Over 120 to and including 125 inches	.25c
Over 125 to and including 128 inches	.50c

Plates less than ¼-inch or lighter than 11 pounds per square foot.

Over 72 to and including 84 inches	.10c
Over 84 to and including 96 inches	.20c
Over 96 to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.

GAGE

Plates Not Exceeding 72 Inches Wide

Plates less than ¼-inch gage, to and including $\frac{7}{16}$-inch; or lighter than 10.2 pounds per square foot, to and including 7.65 pounds square foot	.20c

Plates Over 72 Inches Wide

Plates less than ¼-inch gage, to and including $\frac{7}{16}$-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds square foot	.20c
Plates ordered 7.65 pounds square foot	.30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull materials subject to U. S. Navy Dept. specifications for medium or soft steel	.10c
High tensile hull steel subject to U. S. navy department or equivalent specifications	1.00c
Boiler steel subject to U. S. navy department specifications, classes A-B	1.50c
Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.	

Floor Plates

Checkered plates	1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection .....No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet	No extra
Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.10c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts. (Including straight taper plates)

Additional extra ..... .10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with re-entrant angles)

Additional extra ..... .20c